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"It is considered that the greatest educational need concerns the moral and spiritual attitude of our students. In other words, the greatest educational need today concerns problems of the spirit. The colleges seem to be more concerned with problems of brick, mortar, and bridges rather than with the moral and spiritual development of the students. It is hoped that the colleges will make every effort to remind students of honor, integrity, courage and hope and to give emphasis to the development of young men and women of character as the primary objectives."—From the report by Dean E. V. Christensen, delegate to the 1951 annual meeting of the American Council on Education.

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INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

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Alabama Polytechnic Institute, School of Pharmacy, Auburn (1905)*
L. S. Hinks, Dean

California
University of California, College of Pharmacy, San Francisco. (1942)
Troy C. Daniels, Dean
University of Southern California School of Pharmacy, Los Angeles. (1919)
Alvah G. Hall, Dean

Colorado
University of Colorado, College of of Pharmacy, Boulder. (1921)
Charles F. Poe, Dean

Connecticut
University of Connecticut, College of Pharmacy, Storrs. (1935)
Harold G. Hewitt, Dean

District of Columbia
The George Washington University, School of Pharmacy, Washington. (1909)
Charles W. Silvus, Dean
Howard University, College of Pharmacy, Washington. (1926)
Chauncey I. Cooper, Dean

Florida
University of Florida, College of Pharmacy, Gainesville. (1928)
Perry A. Foote, Dean

Georgia
Southern College of Pharmacy, Inc., Atlanta. (1948)
Minnie M. Meyer, Acting Dean
University of Georgia, School of Pharmacy, Athens. (1928)
Kenneth L. Waters, Dean

Idaho
Idaho State College, College of Pharmacy, Pocatello. (1927)
R. R. Reeves, Dean

Illinois
University of Illinois, College of Pharmacy, Chicago. (1906)
Earl R. Serles, Dean

Indiana
Butler University, College of Pharmacy, Indianapolis. (1927)
E. H. Niles, Dean
Purdue University, School of Pharmacy, Lafayette. (1901)
Glenn L. Jenkins, Dean

Iowa
Drake University, College of Pharmacy, Des Moines. (1942)
Byrl E. Benton, Dean
State University of Iowa, College of Pharmacy, Iowa City. (1901)
Rudolph A. Kuever, Dean

Kansas
University of Kansas, School of Pharmacy, Lawrence. (1906)
J. Allen Reese, Dean

Kentucky
University of Kentucky, College of Pharmacy, Louisville. (1909)
Earl P. Shone, Dean

Louisiana
Loyola University, New Orleans College of Pharmacy, New Orleans. (1921)
John F. McCleskey, Dean
Xavier University, College of Pharmacy, New Orleans. (1923)
Lawrence F. Ferring, Dean

Maryland
University of Maryland, School of Pharmacy, Baltimore. (1900)
Noel E. Foss, Dean

Massachusetts
Massachusetts College of Pharmacy, Boston. (1900)
Howard C. Newton, Dean

Michigan
Detroit Institute of Technology, College of Pharmacy and Chemistry, Detroit. (1928)
C. H. Waldren, Dean
Ferris Institute, College of Pharmacy, Big Rapids. (1938)
Ralph M. Wilson, Dean
University of Michigan, College of Pharmacy, Ann Arbor. (1900)
Tom D. Rowe, Dean
Wayne University, College of Pharmacy, Detroit. (1925)
Roland T. Lakey, Dean

Minnesota
University of Minnesota, College of Pharmacy, Minneapolis. (1901)
C. H. Rogers, Dean

Mississippi
University of Mississippi, School of Pharmacy, Oxford. (1913)
E. L. Hammond, Dean

Missouri
St. Louis College of Pharmacy and Allied Sciences, St. Louis. (1900)
A. F. Schlichting, Dean
University of Kansas City, School of Pharmacy, Kansas City. (1948)
Theodore T. Dittrich, Dean

Montana
Montana State University, School of Pharmacy, Missoula. (1917)
J. F. Suchy, Acting Dean

Nebraska
The Creighton University, College of Pharmacy, Omaha. (1916)
William A. Jarrett, Dean
University of Nebraska, College of Pharmacy, Lincoln. (1913)
Joseph B. Burt, Dean

New Jersey
Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark. (1923)
Roy A. Bowers, Dean

New York
University of Buffalo, School of Pharmacy, Buffalo. (1939)
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Hugo H. Schaefer, Dean
St. John's University, College of Pharmacy, Brooklyn. (1951)
John L. Dandreau, Dean
Union University, Albany College of Pharmacy, Albany. (1945)
Francis J. O'Brien, Dean

North Carolina
University of North Carolina, School of Pharmacy, Chapel Hill. (1917)

*Denotes year institution was admitted to the Association

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A Survey of Methods and Procedures for the Teaching of Pharmacy*

ROY C. DARLINGTON** and VIRGIL A. CLIFT***

1. Introduction

In 1942, at the Denver meeting of The American Association of Colleges of Pharmacy, the Committee on Teaching Methods was discontinued. Retiring President R. A. Kuever stated that teaching methods are and should be handled by the teachers' conferences.[1] With the discontinuance of the above-named committee it was axiomatic that a study of ways and means of improving the quality of teaching pharmacy courses should become a primary objective of the Conference of Teachers of Pharmacy. This derives from at least three facts: (1) the quality of teaching in any college of pharmacy will of necessity determine the quality of its graduates; (2) there is a widespread demand in this country for greater effectiveness in college teaching in all areas;[2] and, (3) in the trainning of teachers of pharmacy, practically no attention has been given to scientific studies of professional education, methodology and psychology of teaching, evaluation of the effectiveness of the learning situation, and theories of education in general.

In the light of the above it appears to the writers that the Conference of Teachers of Pharmacy is in a position to make an invaluable contribution, not only to pharmaceutical education, but also to the profession of pharmacy. There is no doubt that, in the past, worthy papers have been presented on various effective ways of teaching pharmacy courses, in these papers however, an explanation or discussion of the fundamental principles and techniques of teaching underlying these teaching methods was not emphasized sufficiently. This fact was pointed out in 1949 by Dr. R. A. Lyman in his Report of the Committee on Problems and Plans, when he commented:[3]

*Read before the Conference of Teachers of Pharmacy, Buffalo, N. Y., 1951.
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A common complaint is that there are not enough papers which deal with the mechanics of teaching. That is a point which ought to have the attention of the Teachers' Conferences. It seems to the chairman that this was the reason for creating the conferences.

A review of the program content of past Conferences of Teachers of Pharmacy bears eloquent testimony to the validity of Dr. Lyman's statement. This observation should be, therefore, a matter of profound concern to the profession of pharmacy.

Because of the dynamic nature of pharmacy, we are faced daily with the problem of adding increased amounts of new material to the subject matter in courses of pharmacy. Furthermore, obsolete instructional materials are not being deleted. As a consequence, there is not adequate time to teach effectively the total subject matter content. These facts alone make it imperative that more effective procedures of instructional planning and more efficient methods of teaching be employed by pharmacy teachers.

Since the above mentioned detils are generally accepted as highly significant, the purposes of this paper are:

(1) To focus attention on current methods and procedures of teaching pharmacy in the United States.

(2) To focus attention on the educational aims and objectives as stated by colleges and schools of pharmacy, and

(3) To stimulate action for a sustained scientific and detailed study of the art of teaching and its implications for the field of pharmacy.

II. Method of Investigation

The data used in the preparation of this paper were collected by the following methods:

(1) There was a perusal of literature relating to pharmaceutical education.

(2) A survey of literature relating to general methods and practices of teaching in higher education was made.

(3) A questionnaire-checklist designed to elicit information relating to current methods and procedures of teaching was sent to 70 colleges or schools of pharmacy in the United States and to 7 schools in Canada, and

(4) Communications relating to effective methods of teaching pharmacy courses were received from eminent educators in the field of pharmacy.

III. A Summary of Methods and Procedures of Teaching Pharmacy as Reported in the Literature

A survey of the literature indicated that there was a paucity of diversified methods and procedures being used in the teaching of pharmacy courses. Other than the standard lecture-laboratory technique, there were infrequent publications on the use of the demonstration, discussion, student report, conference, visual, audio-visual, visiting speaker, and group-project methods or procedures of teaching. Those authors who in publications discussed the above methods of teaching, unequivocally presented them as being effective in teaching specific courses at their respective institutions. In no single instance was there stated the method of validating the effectiveness of a given teaching procedure.

IV. An Analysis of Results of Returned Questionnaire-Checklists

The questionnaire-checklist used in collecting data for this study was designed to obtain information relative to current methods of teaching pharmacy in the areas of dispensing pharmacy, pharmaceutical specialties or new and nonofficial remedies, and theoretical and operative pharmacy. Completed questionnaires were received from 46 institutions, or approximately 66 per cent of 70 colleges of pharmacy in the United States.

An analysis of the questionnaires received from forty-six colleges follows:

a. Important objectives of pharmacy courses as indicated by the institutions.

Recipients of the questionnaires were asked to indicate the relative significance of eight objectives of pharmacy courses at their respective institutions by checking the objectives as being very important, important, of little importance, or of no importance. In addition, each recipient was asked to list any other objectives considered to be very important or important.

One hundred per cent of those institutions returning the questionnaire considered the following objectives to be very important or important:

(1) The acquisition of fundamental facts and information.

(2) The development of professional conduct on the part of the student.

(3) The development of ethical and moral conduct of students.

(4) Developing appreciations and interest in the total field of pharmacy as an area of knowledge, and

(5) The acquisition of operative skills and techniques which are essential in the practice of the profession.

More than 98 per cent of the schools considered the following objectives to be very important or important:

(1) Developing sociably personal traits which are essential for rendering maximum service in the practice of the profession, and

(2) Building meanings for concepts and principles relating to pharmacy.

Approximately 93 per cent of the schools considered receiving on-the-job training for intern or apprentice to be very important or important. Approximately twelve schools submitted 16 additional objectives as being important or very important.

This approximate unanimity of opinion of prominent educators of pharmacy indicates that a broad set of objectives is considered as highly desirable at nearly all colleges of pharmacy. (See Table I)

b. Methods and procedures of teaching dispensing pharmacy, pharmaceutical specialties, or new and nonofficial remedies, and theoretical and operative pharmacy.

Replies to queries as to the number of methods and the extent to which different teaching procedures were being used in three areas of pharmacy indicated that in most schools a wide variety of instructional media was not being employed.

Although the data collected by means of the questionnaires had to do with teaching in only three areas of pharmacy, it is the opinion of the writers that an analysis of the data has general application to the teaching of all pharmaceutical courses in most schools and colleges of pharmacy.

Objectives checked in the questionnaire and those submitted as important by individual colleges are stated in the tabulations which follow.

Objectives Listed in the Questionnaire

	Per cent of colleges that considered objective very important or important
1. Acquisition of fundamental facts and information	100.0
2. Development of professional conduct of the student	100.0
3. Development of ethical or moral conduct of the student	100.0
4. Developing sociably personal traits which are essential for rendering maximum service in the practice of the profession	98.9
5. Building meanings for concepts and principles relating to pharmacy	98.9
6. Developing appreciations and interests in the total field of pharmacy as an area of knowledge	100.0
7. Acquisition of operative skills and techniques which are essential in the practice of the profession	100.0
8. Receiving on-the-job training as an intern or apprentice	93.6

Objectives Submitted by Individual Colleges as Being Very Important

1. "Development of sense of responsibility.
2. "Education of total citizen rather than imparting learning to the the specialist.
3. "Realization that all courses must be integrated and that one course is of no more importance than another.
4. "Habits of accuracy and cleanliness as ingrained habits.
5. "Emphasis on professional pharmacy.
6. "Inculcating the necessity of absolute professional honesty and integrity.
7. "Application of the Golden Rule in pharmacy.
8. "Developing ability to correlate material from chemistry, materia medica and apply them to the problems of prescription compounding.
9. "Showing relationship between each course in pharmacy to the climax course, dispensing.
10. "The acquisition and appreciation of pharmaceutical skills.
11. 'The achievement of a high degree of correlation between the basic sciences and the application in the field of pharmacy.
12. "The acquiring of a keen appreciation of the worthwhileness of the work of the pharmacist in the general field of public health.
13. "Teaching students 'how to live' as well as 'how to make a living'.
14. "To have students take a part in collective effects such as association meetings, clubs, etc.
15. "Graduating scientifically trained persons who will raise the standards of pharmacy.
16. "Interprofessional relationship; the pharmacist and the physician. Emphasis on teamwork."

An analysis of returned questionnaires revealed that approximately 65 per cent of the colleges used two methods in teaching dispensing pharmacy. In teaching pharmaceutical specialties or new and non-official remedies, approximately 47 per cent of the institutions used two methods and 47 per cent used one method.

About 78 per cent used two methods in teaching theoretical and operative pharmacy. The lecture and laboratory methods were used predominantely at all of the institutions. Fewer than 18 per cent of the colleges used three or more methods of teaching in any of the above-mentiond areas. The majority of schools reporting did not consider that any of the teaching procedures listed in the questionnaire were being used extensively in any of the three areas of pharmacy.

c. Time allotted to teaching the three areas of pharmacy.

The survey also disclosed that there was a distinct lack of uniformity among the colleges of pharmacy, not only as to the number of total clock-hours devoted to the teaching of course content in the three areas, but also as to the number of hours utilized in various methods of teaching. The total clock-hours consigned for the teaching of dispensing pharmacy varied from a minimum of 96 to a maximum of 360. In pharmaceutical specialties the range was from 30 to 126 hours. In theoretical and operative pharmacy the range was from 48 to 540 clock-hours.

Allowing for differences in the interpretations of the questionnaires and for the variations in subject matter content of the above-mentioned areas at the individual institutions, this lack of uniformity still appears to be highly significant.

d. Average number of students per class.

Of the colleges reporting, more than 78 per cent indicated that the average number of students per class exceeded 30. Approximately 57 per cent had average size classes that exceeded 45. The range of average class size was from 15 to 120. This is obviously important in determining the extent to which a variety of teaching methods may be used in many institutions.

V. Recommended Criteria for Teaching Pharmacy

The following criteria are designed to furnish a framework or pattern which may serve as a guide to teachers in organizing the most effective methods and procedures for teaching pharmacy.

The criteria were derived inductively after due consideration had been given to the reported opinions of eminent educators in the field of pharmacy, to the literature dealing with the teaching of pharmacy and to basic principles of teaching and learning which have application to higher education. No attempt is made here to do more than list guiding principles which may be applied by the individual teacher in terms of his best judgment. The criteria follow:

a. There is a need for a specific and concise statement of overall objectives and purposes of pharmaceutical education.

There has been no universally accepted statement of overall objectives and purposes of pharmacy to the extent that it has been given publicity in the literature. It would seem logical, therefore, that specific and clearcut objectives and purposes be established. Educators are agreed that purposes should permeate the total program of pharmacy and give direction to it; these purposes should influence its operation as well as its fundamental nature. In other words, a well considered statement of objectives and purposes which is accepted by the colleges, the teachers, and the students should have a direct bearing and influence on:

1. **All teaching and learning activities in all courses of pharmacy.**
2. **All evaluation and measurement of learning outcomes.**
3. **The contents of the curriculum.**
4. **The determination of teaching methods and procedures, and**
5. **The time allotted for the achievement of common goals.**

b. The methods and procedures of teaching should be consistent with the avowed purposes and objectives.

It is patent that the methods and procedures of instruction should be consistent with the purposes to be achieved in terms of behavior on the part of students. If the major objective in a given course is to have students acquire factual information, then the methods and procedures of instruction should stress the learning of facts. Conversely, if the major purpose in a course is the acquisition of logical skills, then those methods and procedures which give promise of teaching students to think effectively should be employed.

Schools of pharmacy have indicated that their intention is to teach more than facts and operative skills; an exploration of methods and procedures of teaching, therefore, which will achieve a broader

set of purposes is urgently needed. The paucity of teaching methods now being used makes it apparent that many desirable objectives are being achieved incidentally, if at all.

Psychologies of learning and studies in the principles of teaching on all levels of learning have shown that when a wide variety of instructional media is used, there is greater possibility that information will be gained with greater ease and will be retained over a longer period of time.

c. Evaluation and measurement of student progress should be in terms of all accepted objectives of pharmaceutical education.

There is ample evidence to the effect that students of pharmacy acquire knowledge relative to facts, principles and skills inasmuch as valid tests exist for the measurement of the extent to which these have been acquired. There is no evidence, however, that there has been any serious attempt to measure student growth in terms of professional conduct, ethical and moral conduct, appreciations and interests, and the degree to which they build meanings for concepts and principles relating to pharmacy. These are only four of the objectives which colleges of pharmacy have indicated as very important or important for their students. While it is generally recognized that there are no validated methods of measuring student progress in the achievement of these objectives, pharmacy as a profession must give serious thought to effecting means of evaluating the achievement of the above and similar objectives.

d. The extra class aspects of the pharmacy program should be consistent with the purposes of pharmaceutical education.

Professional educators recognize that contributions to the development of students are not confined to the classroom and laboratory activities. The extra-class activities of the school play a significant role if they are organized and operated in terms of recognized objectives. Some of the extra-class aspects of a good program of pharmacy include the selection and admission of students, the program of student guidance, the program of student organizations, the

program of follow-up after graduation, and continuous evaluation of the total educational program.

This means that the faculties should devote time and serious effort to the planning and carrying out of these activities if the best possible experiences are to be provided for students.

e. The teaching staff should have a broad and comprehensive knowledge of higher education as well as of pharmacy.

The teacher of pharmacy occupies a dual role in that he should be a highly competent person in the profession as well as a student of higher education. It is not necessary to belabor the point that the pharmacy teacher should be a competent pharmacist. On the other hand, it is needful that we take due cognizance of the fact that the quality of our graduates is in direct proportion to the quality of teaching that produces them.

It may be said without question that most individuals who are teaching in schools of pharmacy have given little attention to scientific studies of professional education. This could be regarded by some as being a very unscientific approach to presenting a scientific area of knowledge.

Detailed studies have been made and published on the methods and procedures of teaching in higher education. Dentistry and nursing, to mention these two professions, have had elaborate studies made of methods and principles of education for the purpose of making specific adaptations of these to their professions. It appears, then, that in the field of pharmaceutical education, studies should be made based upon scientific approaches to teaching and learning.

References

1. Kuever, R. A., Am. Jour. Pharm. Ed., Vol. VI, p. 450
2. Russell, J. D., "Toward Better College Teaching", p. IV, Federal Security Agency
3. Lyman, R. A., Am. Jour. Pharm. Ed., Vol. XIII, p. 508

The 1952 Remington Medal Presentation Address

HUGO H. SCHAEFER*
Long Island University, Brooklyn College of Pharmacy

I suppose that it is only human on an occasion such as this to review the passing years, to evaluate the progress which has been made and the changes which have occurred in our profession. I refuse to acknowledge that I am rapidly approaching the age which would make me a suitable test animal for geriatric experimentation and observation, but this I fear is a form of self delusion or a state of mind for the present must be set aside in order that I may qualify as one who can delve into the past so as to justify my comments on the future.

Forty-three years have passed since I began my apprenticeship in pharmacy and thirty-nine years since I graduated from college and became a registered pharmacist. As I look upon these years I find little cause for regret. If I had to live them over again, I would try to correct some of my many errors of omission and commission, but I would most certainly again choose the field of pharmacy as the sphere of my activities and interests. I would do so because of a convincing realization that pharmacy has made great forward strides in all its economic as well as professional fronts and that it offers a most promising and satisfying field of activity for those who make it their career. My faith in pharmacy forty-five years ago has been justified by passing events. While I devoted most of my years to pharmaceutical education, yet, my thinking, my activities and my interest are primarily those of the professional retail pharmacist. I will never forget my period of apprenticeship in the drug store, that period in my formative years which made such a great impression upon me. Since then, I have had an insight into all segments of our industry and a rather close relationship to several of them aside from my many years of activity in the educational field. I have had the benefit of a broad view of all aspects of the production and distribution of drug store products and still retain the firm conviction that the retail pharmacy is the keystone of our entire industry.

*Dr. Hugo H. Schaefer is the twenty-ninth recipient of the Remington Medal granted for distinguished service to the profession of pharmacy.—Ed.

We can all look with pride upon the progress made by retail pharmacy. I need not describe the drug store of forty years ago and compare it with the modern pharmacy of today nor discuss the economic advances which have been made. These changes have been observed by most of you and have been reviewed on many occasions for the benefit of those who are not old enough to have witnessed them.

One often hears disparaging comparisons made between pharmacy of yesterday and of today because of the increase in the prescription dispensing of manufactured preparations and specialties and the decline in the number of products compounded in the pharmacy as well as the waning importance of U.S.P. and N.F. products as compared to branded name preparations. I, too, deplore this trend, but a mental analysis of the situation brings me to the conclusion that my feelings are based largely on sentimentalism just as I also regret that we no longer observe the characteristic drug store odor of many years ago and that the pharmacist has discontinued giving gum-drops, licorice and slippery elm to children.

Fifty years ago my father bemoaned the fact that most pharmacists were no longer making their own pills, plasters, tinctures and fluid extracts. Today we realize that it would be a practical impossibility to provide space, time and manpower for such outmoded activities. The underlying reasons for these trends go, however, beyond mere economic questions. Only large scale manufacturing procedures with elaborate scientific equipment and personnel can provide the necessary production refinements and controls which are more essential today than before because of the very nature of our modern medicaments. Consider, for instance, our vast production and use of the antibiotics. These drugs and their dosage forms must be prepared under most painstaking conditions to insure full potency, purity, sterility and keeping qualities, and, in fact, samples from every lot must be submitted to the Food and Drug Administration for their examination before being released for distribution. Each step in the production of these so-called "wonder drugs" must be rigidly controlled and a patient's life often depends upon their effectiveness. The pharmacist should realize that these products must come to him and be dispensed in finished form and that this in no manner lowers his professional dignity. He must know all about the

nature, action and uses of the antibiotics and this requires a vastly increased background of scientific and professional knowledge.

The necessity for accepting finished prescription products from the manufacturer is, of course, not confined merely to the field of antibiotics. A similar need for exacting production and control procedures exists in the vitamin field because of the very nature of the medication involved. In mixed vitamin therapy for instance, some ingredients are used in only microgram quantities. Chemical incompatibilities often require that some of the ingredients be placed in the tablet coating or in an interior pellet. Without such precautions rapid deterioration would result. Such products can only be properly produced in large laboratories.

Many other illustrations could be given. The production of most dosage forms of hormones, glandular products and injectable substances must of necessity be left to the manufacturer. They require extensive research, elaborate equipment and continuous chemical and biological controls to safeguard the effectiveness of the finished product.

The fact that the pharmacist no longer compounds as many prescriptions as he did in former years is not a cause for his losing faith in his profession. He is dispensing more potent, more effective, more ueful preparations today than ever before. He is not a mere purveyor of package goods, but rather a person with an extensive knowledge of the nature of his prescription products, one who can discuss them intelligently with the physician and who has a thorough understanding of their action and uses. Thus his education and training must cover a vast scope of newer medicaments undreamed of in past years and he must remain constantly alert to the many new and important medicinal agents which are being developed at an ever increasing rate. He compounds fewer mixtures in his prescription department, but this merely means a reduction in the time devoted by him to purely manipulative activities and the fact remains that he is filling more prescriptions than ever before and is dealing with preparations which require a far greater professional knowledge and are incomparably more effective and potent than those of earlier days.

We must face realities. We cannot afford to assume that prescription practices and procedures which prevailed years ago must

go on forever despite our changing materia medica. We must have faith in pharmacy not just blindly, but with a complete realization of its increased importance and responsibilities.

The present much discussed question of restricting many drugs to prescription use is an indirect tribute on the part of the law makers of this country and of its enforcement agencies to the importance of pharmacy in the health professions. In all recent legislative proposals and enactments the pharmacist has received increased recognition by being consistently designated as the only person who can be safely entrusted with such duties and responsibilities. Years ago there was no need for such added restrictions since the drugs generally used were relatively harmless and correspondingly ineffective. Greater responsibilities have been placed upon pharmacy by a changing medical world and this should create faith in our profession and do away with our fears for the future.

This change in general prescription practice from mixtures which must be compounded by the pharmacist to manufactured preparations has, however, created one situation which I deplore. I have in mind the apparent needless duplication of identical or closely similar mixtures marketed by different manufacturers under different trade names. That this is not exactly a new development can be gathered from the Presidential Address of Joseph Price Remington delivered at the 41st meeting of the American Pharmaceutical Association in Chicago on August 14, 1893. President Remington had been discussing the rise of synthetic organic medicinals in the materia medica of his day. He then spoke as follows:

"The effect upon pharmacy and medicine of this extraordinary activity in the synthetical departments of chemical science has been profound: new chemical compounds and new classes of compounds have been flooding commerce like a deluge, the more valuable ones being protected by letters patent or by copyright names; competition among the large manufacturers is extremely fierce, and the result to the average pharmacist has been to produce confusion, uncertainty, and annoyance; the representative of one manufacturer no sooner visit him and the neighboring physicians, before a competitor follows on his heels with another remedy, claiming even greater advantages and which does not possess the disadvantages of the one that has already been added to the stock."

While pharmacists of the present day may willingly accept the premise that many of our newer medicaments can be made best in

large laboratories under careful control procedures, yet, they strongly resent the fact that to a great extent these items are merely duplications of products made by other producers. Many such products vary in name only and not in composition or formula, and add nothing to our materia medica or to improved medication.

Considering the fact that a large percentage of prescriptions today call for single drug remedies and that the basic ingredient of these single drug remedies emanates, as a rule, from a limited manufacturing source, there should be some method of avoiding the economic waste and confusion resulting from the urge to supply whatever may be new in a form which indicates proprietorship. Proprietary rights are granted for a limited period under our patent laws for new and useful discoveries. But when the discovery is marketed by somebody other than the discoverer and the alleged proprietary right results only from adding a flavor or devising a clever dosage form and coining a name, we witness a type of competition which fails to recognize the elements of fairness and the principles of medical and pharmaceutical ethics.

I realize that all of the violations of good ethics and commercial fair dealing are not on one side. There is the reprehensible practice of some retail dispensers of drugs to substitute unbranded replacements for branded products without consideration for the legal rights of those who own patents or trade marks. Merely to mention these practices is to call attention to the fact that we have some unwholesome situations growing out of the commerce in drugs rather than the desire to render a high quality of professional service.

Pharmaceutical manufacturers today are spending millions of dollars annually for research which occasionally leads to the discovery and development of some new and more effective medicinal agent, but more often merely adds to the sum total of knowledge of chemistry and pharmacology. These contributions to scientific progress are possible only through expenditures which are recouped from the sale of products which have been successfully launched as new remedies.

In our colleges of pharmacy the faculties are continually urging young people to recognize the professional aspects of their calling whether they expect to practice pharmacy in retail establishments, in hospitals, in manufacturing institutions, or elsewhere. But we

have great difficulty in explaining to these young people how a retail dispenser can establish himself without a rather large and to a considerable extent unnecessary expenditure for stocks of so-called specialties, which in many instances are simply duplications of existing standard products.

And we have even greater difficulty in explaining how they are to overcome the financial loss resulting from the fact that so many of the new prescription products launched with ambitious advertising and sales campaigns become shelf-warmers after one or two prescriptions call for them.

I know that many leaders in the drug industry, as well as in the profession have given this problem much thought and are alarmed over the ultimate consequences of the situation which is clearly not in the interests of the sick or of the professions involved in treating the sick. Recognition of the problem is the first step towards its solution, and even though I am reiterating complaints recorded nearly sixty years ago by Remington, I am hopeful that the industry and the profession will take necessary steps to meet this situation before it becomes worse.

So far I have confined myself to observations of the prescription dispensing trends in pharmacy. I repeat that aside from the potential dangers created by the marketing of large numbers of needless items the prescription practice of the pharmacist has gained in importance both as a source of income and of increased prestige. This, however, cannot be said of his other activities. The sale of potent and dangerous drugs has become more effectively confined to the pharmacy both by legislation and by general public acceptance but we are now witnessing a reverse trend as far as other drug store products are concerned. The current inroad into general drug store sales by super markets and other non-pharmacy outlets is one such factor. Another one is the recent court decision nullifying the effectiveness of our fair-trade laws thus adding further fuel to undesirable competition and in addition to all this we are now threatened with encroachment of our traditional rights by court actions intended to challenge the purpose and scope of our state pharmacy laws and regulations.

These trends cannot be allowed to go unchallenged. They have as their objective increasing the number of outlets for drug store

products and this would result in bringing the pharmacy to the level of the ordinary merchant. We are told by many that this deplorable situation can best be met by adopting more aggressive merchandising procedures but such a policy I fear would only result in still further stressing the purely commercial aspects of the pharmacy. The future of our profession of pharmacy lies in our emphasizing the professional character of our retail establishments, the added services which we render and our specialized knowledge and training which make such services possible.

This, however, cannot be done without the full cooperation and understanding on the part of the other branches of our industry. Our manufacturing and wholesaling friends should realize that they have little to gain and much to lose by vastly widening their area of retail outlets. They have grown and prospered in a specialized field of activity, but this field is only specialized because of the fact that their products did not enter into general distribution channels and were confined primarily to the retail pharmacy. A widening of the nature of retail outlets for drug store products will inevitably cause a breakdown of the barriers which now create this specialized field for the manufacturer and wholesaler and he, too, will have vastly increased competition from completely unrelated sources.

I cannot help but reach the conclusion that while the prescription services in the pharmacy have become more significant both from the professional and economic standpoint that nevertheless the other phases of drug store activity are in danger of underlying changes which are not in the best interest of pharmacy or of public welfare. It is foolish to try to rely merely on the enactment of legislation to correct these conditions. Many of them require a better understanding and a greater degree of cooperation within the industry itself.

There must be a complete realization of the fact that the interests of any one branch of our industry and profession are common to all and that none can afford to have a weak line in our rather complex chain of production and distribution.

I feel confident that there is a growing realization of the need of such mutual understanding. Eventually we must and will have it, but the great danger is that we may wait too long before it becomes completely effective and much harm can come in the meantime.

Remington in his Presidential Address of 1893 also referred to the problem of encroachment of non-pharmacists on the prerogatives of pharmacists, and like myself he had no immediate program to offer to correct the conditions of which he complained. He said:

"It has not been deemed necessary, in this address, to bring forward at this time for your consideration a new plan for the control of the sale of various medicinal preparations, which have long been sold by druggists, but which have either shaken their allegiance to the apothecary, or have been appropriated by merchants in other vocations, who have for years cast longing eyes upon the much-talked-of profits from their sale.

"It would seem to accord with the universal 'fitness of things' to assert that the proper man to sell medicines is the medicine man, and it is surely in the interest of the common weal to have their sale controlled by educated and especially trained dispensers of remedies, which remedies are often dangerous in the hands of the inexperienced."

I can think of no better reason than that given in the foregoing quotation from Remington to appeal at this time for an early appraisal and study of prevailing policies of the different segments of the drug industry and the profession of pharmacy with regard to the effect of these policies upon the welfare of pharmacy as a whole and upon "the common weal."

In 1893 considerations of health had not reached the significance in the lives of our people that they command today. Americans are a health conscious people today and our nation has made tremendous strides in lowering death rates and extending the individual span of life. Pharmacists have contributed and are daily contributing to the general progress in creating and maintaining better health through the development and judicious use of drugs. Considering the fact that we have been able as a profession to solve intricate problems of production, standardization, and dispensing of complex medicinal agents, it would seem that it should not be too difficult to also solve the economic and social problems which arise from the rapid development in our professional services.

The Pharmaceutico-Historical Movement*

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Throughout the ages pharmacists all over the world have been cognizant of the fact that theirs is a task transcending national borderlines and asking for international communication and ezchange of knowledge and experience. Furthermore, they could not fail to see that this task, assigning to them the duties of public health servants, requires of necessity ethical standards guiding the conduct of the pharmaceutical world and making brethren of all pharmacists wherever they might practice their profession of science and trust.

It has been this conviction that has led to the various pharmaceutical international congresses, associations and agreements that have sprung up during the last century. There has been one trend, particularly, that has brought together members of the profession all over the world on exclusively cultural ethical grounds and has gained recognition as an indispensable basis for a truly professional conscience and atmosphere: the pharmaceutico-historical movement.

I. Individual Effort.

Endeavors of pharmaceutico-historical interest manifested themselves at a relatively early date. In 1722 a booklet entitled "an attempt at a history of pharmacy in Nuremberg" (Germany) appeared and later, especially after the year 1800, essays on the history of pharmacy formed the introductory part of several French and German pharmaceutical textbooks. It was, however, not until 1853 that there appeared the first comprehensive history of pharmacy. It was written by the French physician A. Philippe, appeared soon in an augmented German translation and has been used by all later historians of pharmacy. It was followed, in 1865, by the *Historica de la Farmacia* of the Spanish pharmacists Chiarlone and Mallaina. However, the epoch of more general pharmaceutico-historical research and interest did not begin until the turn of the nineteenth century. It was in 1900 that André-Pontier published his *Histoire*

*Contributed to the Second Pan-American Congress of Pharmacy at Lima, Peru, December 1951.

de la Pharmacie, and in 1904 that there appeared Hermann Schelenz' voluminous *Geschichte der Pharmazie* harboring an enormous amount of data and details on pharmacy all over the world. Since that time a flood of pharmaceutico-historical literature, including several national histories, has made its appearance.

II. Support by Pharmaceutical Industry.

It was the individual interest of some historically minded pharmaceutical practitioners and scientists which was responsible for the development of the pharmaceutico-historical literature referred to above. In more recent time pharmaceutical manufacturers have supported or even initiated the issuance of historical publications of interest to medicine and pharmacy. Among the latter special mention should be made of E. Merck, Darmstadt (Germany), Lovens Kemiske Fabrik, Copenhagen (Denmark), Burroughs Wellcome & Co., London (England), and the Laboratories del Norte de Espana, S. A., Masnou-Barcelona (Spain). The two last-named manufacturing plants have, in addition, established remarkable museums, testifying to the fact that personal interest, and not merely benevolence, of the leaders of the concerns expressed itself in these ventures. As far as Burroughs Wellcome & Co. is concerned it was the late Sir Henry S. Wellcome. As to the Laboratories del Norte de Espana it was the Director General G. Cusi. In the Latin Americas an admirable example for the combination of promotion of and active participation in pharmaceutico-historical work has been given by the manufacturer-pharmacist, Dr. Angel Maldonado, Lima (Peru), Founder and Director of the Laboratories Maldonado as well as of a museum devoted to the history of the sister professions of medicine and pharmacy and author of a number of historical publications, among them (in cooperation with Professor Hermilio Valdizan) the fundamental three volume work on *"La Medicina Popular Peruana."*

This list is by no means complete. It only stresses cases which, in the opinion of this writer, are of symptomatic importance. It is not concerned at all with the many collections of pharmaceutico-historical interest which can be found in many countries as parts of local or national museums or as remnants of old hospitals or finally in connection with schools of pharmacy. A list of such collections has been included in the indispensable book on *"Pharmazeutische*

Altertumskunde" by Josef Anton Häfliger, published at Zürich in 1931.

III. Pharmaceutical History as a Responsibility of Organized Pharmacy.

The establishment of the renowned pharmaceutical museum within the "Germanisches Museum" in Nuremberg may be regarded as the earliest approach to the concept of pharmaceutical history as a cooperative venture of the practicing pharmacists. Following an appeal, in 1883, by the pharmacist-historian Herman Peters, favorably known through his books *"Aus pharmazeutischer Vorzeit,"* the *Deutscher Apotheker Verein* and quite a number of individual pharmacists contributed to the costs of the museum and made its establishment possible. However, this interest proved to be of a rather sporadic nature. Attempts by Peters, as well as by his colleague Herman Schelenz, and the Swiss historian Burkhard Reber, to make the pharmaceutical associations ar ' or the pharmaceutical practitioners in their respective countries history conscious, failed. In an address delivered at Liége (Belgium) in 1905, Schelenz stated that "associations of pharmacists do not pay special attention to historical efforts." In a footnote he added the following remark:

"The only known exception seems to be the American Pharmaceutical Association, which recently has established a committee on historical pharmacy."[1]

Schelenz' assumption was correct. It was on American soil that for the first time a national organization of pharmacists decided to make history of pharmacy a part of its official responsibility and met with success. As early as in 1902 the American Pharmaceutical Association commissioned the pharmacist-historian and head at the School of Pharmacy at the University of Wisconsin, Edward Kremers, with the establishment of a Committee on the History of Pharmacy. Two years later, in 1904, this "Committee" became the Association's "Section on Historical Pharmacy." Thus has been offered, throughout almost half a century, once a year (at the annual meetings of the Association) an occasion for the presentation and discussion of pharmaceutico-historical papers. In 1941 the American Pharmaceutical Association established the "Friends of Historical Pharmacy, Inc." (all members of the Association automatically be-

[1] Süddeutsche Apoth. Ztg. No. 70. 1906.

ing "Friends") for the preservation of and care for historic properties of pharmaceutical interest.

There has been drafted and presented to the Brazilian Academia Nacional de Farmacia a "Tese oficial" concerning the establishment of an Instituto Brasileiro de Historia de Farmacia.[2] If, as it seems, this "Institutio" should be established and function within the frame work and under the authority of the "Academia", it would be another example for "'pharmaceutical history as a responsibility of Organized Pharmacy."

IV. Pharmaceutical History as a Cooperative Endeavor.

In the meantime, the efforts towards a pharmaceutico-historical movement aimed at more comprehensive activities and long range planning which had crystallized in France as well as in Germany found a particular kind of expression in the United States and were more recently realized in Peru, Spain the Benelux countries (Belgium, Netherlands, Luxembourg) and Italy. However, in their pioneer stage these organizing efforts were at best tolerated but hardly supported by the professional national associations. They were realized as ventures of independent individual pharmaceutical practitioners and scientists interested in the history of pharmacy. It was already much if, as it happened in France, these efforts obtained the official approval (although not support) of the other organizations within the profession of pharmacy.

1913: France.—It was in 1913 that the Société d'Histoire de la Pharmacie was founded at Paris. Under the leadership of Guitard, its "directeur-fondateur," (now "secrétaire pérpétuel"), and later on of Maurice Bouvet and Louis Irissou, the new organization developed excellently. Its activities have never been interrupted and its quarterly journal, called first *"Bulletin de la Société d'Histoire de la Pharmacie"* (until 1930) and later *"Revue d'Histoire de la Pharmacie"*, was until 1950 the only regularly appearing periodical in the world devoted exclusively to the history of pharmacy.

An outgrowth of the Société d'Histoire de la Pharmacie, not competing with but rather accompanying the latter, was the Société des Pharmaciens Bibliophiles, founded in 1930 as an exclusive group interested in the issuance of limited editions of books which, touching the sphere of pharmacy in the one way or another, commanded

[2] Bol. Acad. Nac. Farm. (Brasil) X, vol. 2. 1948. pp. 781-84.

a special bibliophile interest. Representing delicate tidbits, these publications have charmingly testified to the cultural aspects of pharmacy. In contrast to the Société d'Histoire de la Pharmacie the Société des Pharmaciens Bibliophiles discontinued its activities since World War II. It is to be hoped that this means only an interruption, not a definite end.

1926: Germany.—It was at the initiative of the Austrian pharmacist-historian Ludwig Winkler, teacher of the history of pharmacy at the University of Innsbruck and heir to a pharmaceutical store that had been in the possession of his family for about 350 years, that in 1926 five men, among them this writer, founded at Innsbruck the Gesellschaft für Geschichte der Pharmazie. The venture proved successful. The Society attracted groups of interested pharmacists in Germany, Switzerland, Austria, the countries formerly under German or Austrian political and/or cultural influence, and individual prominent pharmacists of all parts of the civilized world. The "Gesellschaft" did not issue a journal. Instead, it took up the task of publishing books and pamphlets of pharmaceutico-historical interest. Thus far it has brought out about 40 publications, several of them voluminous, which never would have been published otherwise. More or less dormant after 1939, the Gesellschaft für Geschichte der Pharmazie was revived at Hamburg in 1949. The fact that this meeting was attended by pharmaceutical messengers of good will from France, England, Holland and the Scandinavian countries, testifying to the international recognition of the work and the tendencies of the "Gesellschaft", resulted in the addition of the significant adjective "international" to its name, which now reads "Internationale Gesellschaft für Geschichte der Pharmazie." Under the leadership of the meritorious historians of pharmacy J. A. Häfliger, G. E. Dann and Fritz Ferchl, the revived society has again attracted a great number of members and issued several publications.

1949: Peru.—This Latin-American country, sharing with Mexico the tradition of the earliest and most consequential meeting of ancient American and European culture, has been mentioned above as the place of the pharmaceutico-historical activities of Dr. Angel Maldonado. It was one of his students, Dr. A. Bedoya Villacorta, author of a number of remarkable publications in the field, who in 1949 succeeded in arousing sufficient interest among the Peruvian

pharmacists to make the founding of a Peruvian Society for the history of pharmacy possible.

1950: Spain.—Since the pharmacists in Spain have always been proudly aware of their traditional place within Spanish society and culture, the rather late founding of a particular group of members of the profession for the promotion of pharmaceutico-historical interest might have its reason in the conviction that there was hardly a need for it. However, within the world wide pharmaceutico-historical movement of our time the existence of this Spanish Society with its quarterly "*Boletin*" is of all the greater importance because the men at its helm are recognized authorities in the history of Spanish pharmacy. It is almost unnecessary to state that the president of the new society is Dr. Rafael Folch y Andreu, for many years professor of the history of pharmacy at the University of Madrid, assisted by his son, Dr. Guillermo Folch Jou who quite recently (in 1951) has followed his father in authoring a "Historia De La Farmacia."

1950: Italy.—In Italy it was on the occasion of the 70th birthday of the meritorious Italian historian of pharmacy, Giulio Conci, that an Italian association of the history of pharmacy was founded. Since just in recent years a number of historical publications probing into Italy's magnificent pharmaceutical past have been issued, the work of this new association can be looked for with much expectation.

1951: Austria.—As mentioned under "Germany", the "Gesellschaft für Geschichte der Pharmazie" (since 1949 called "Internationale Gesellschaft für Geschichte der Pharmazie") was founded in 1926 in Austria and its first President was an Austrian. Hence there was no thought of a separate (or special) "Oesterreichische Gesellschaft für Geschichte der Pharmazie". However, such a special society was established in 1951 and put under the presidency of the meritorious historian of pharmacy, Otto Zekert, known especially for his comprehensive Scheele biography. The new society has retained its close connection to the "Internationale Gesellschaft für Geschichte der Pharmazie", forming one of the latter's national groups. Whether it will develop some activities of its own remains to be seen.

1951: Benelux Countries.—The fact that three continental European countries, Belgium, the Netherlands, and Luxenbourg, have

agreed on a kind of political superstructure, has expressed itself in some cultural aspects likewise. In our field it has led, in 1951, to the founding of the "Kring voor de Geschiedenis van de Pharmacie in Benelux" (Cercle Benelux d'Histoire de la Pharmacie), which is issuing a Bulletin edited by Dr. D. A. Wittop Koning Amsterdam, and Mr. P. van de Vyvere, Brugge. President of the "Kring" is Dr. P. H. Brans, Rotterdam.

V. Organized Pharmaceutico-Historical Research and Information

While the "cooperative endeavor" promotes and, as far as possible, supports historical research in the field of pharmacy, it lacks the facilities of a permanent center with a permanent staff for organized pharmaceutico-historical research and for adequate information service. An attempt to close this gap was made in 1941 in the United States of America.

1941: American Institute of the History of Pharmacy

With the support of the renowned American pioneer of the history of pharmacy, Edward Kremers (who died a few months afterwards), and at the initiative of his successor as head of the School of Pharmacy at the University of Wisconsin, Arthur H. Uhl, the American Institute of the History of Pharmacy was founded in January 1941 at Madison, Wisconsin, U.S.A., with Dr. Uhl as its President and George Urdang as its Director. Both positions are still held by the same men. The election in 1949 of Glenn Sonnedecker, former Editor of the Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association, as Secretary of the Institute has not only proved of great immediate help but has simultaneously secured the continuation of the work for the foreseeable future.

The objectives established, and pursued ever since the founding, are:

"1. to aid in the collection, selection, arrangement and exhibition of pharmaceutico-historical material and, as far as possible, to catalogue and to inventory this material;

"2. to give the research worker in the field of historical pharmacy the possibility to discuss his projects, to get advice on literature and to publish the manuscript concerned;

"3. to furnish information and aids for historical instruction at the Schools of Pharmacy;

"4. to furnish material for popular pharmaceutico-historical information directly to the general public (individuals, journals, newspapers, etc.) or to individual pharmacists for use in their social or professional relations;

"5. to cooperate with the historians of the related sciences and professions, especially of medicine, in order to promote the mutual scientific professional and social understanding and progress to be derived from such a cooperation."

It is understood that tasks like these are far beyond the scope of collegial cooperative ventures without a permanent office and staff. The uniqueness of the American Institute of the History of Pharmacy lies in the fact that not only does it issue publications like the French "Société" or the "Internationale Gesellschaft" but, in close connection with the University of Wisconsin and making full use of all the facilities of this great institution of learning, it is doing and organizing research, offering opportunity for it and help in it.

In other words, the Institute tries to meet the tasks of an American center and clearinghouse for research, instruction and information in the history of pharmacy in all of its aspects, the scientific academic as well as the social and cultural ones. It is open for full membership—with voting privileges—to everyone in "the Americas" (meaning the Western Hemisphere) and open for associate membership—without voting privileges—to people residing in other parts of the globe. Members (annual fee: $5.00) are receiving the publications (books, pamphlets, pictures) issued and/or distributed by the Institute.

In the First Pan-American Congress, held at Havana (Cuba) the first week of December 1948, two resolutions concerning the American Institute of the History of Pharmacy were adopted as follows:

1. The American Institute of the History of Pharmacy was recognized as "the Pan-American Research Center in the History of Pharmacy;"

2. The project of the American Institute of the History of Pharmacy to issue in Spanish (or Portuguese) and English brief histories of pharmacy in the Latin American countries, authored by pharmaceutical historians residing in these countries but edited by the Institute, was endorsed by the Congress.

The first of these histories, authored by Dean Luis Torres-Diaz and dealing with pharmacy in Puerto Rico, has just appeared. The second one, devoted to the development of pharmacy in Argentina and given the benefit of the authorship of Latin America's

outstanding pharmaceutical historian, Francisco Cignoli, is in preparation.

The close ties connecting the American Institute of the History of Pharmacy with the Latin American pharmacists interested in the history of their profession have not only been evidenced but activated by the appointment of the following representatives of the Institute in their respective countries:

Argentina: **Professor Dr. Francisco Cignoli;**
Brazil: **Dr. Alvaro Albuquerque;**
Cuba: **Dr. Héctor Zayas—Bazan;**
Mexico: **Sr. Vicente Castro Garcia;**
Peru: **Professor Dr. Angel Maldonado.**

It is intended to appoint one representative of the Institute in every Latin American country in order to achieve full mutual understanding and cooperation in this important field of common professional endeavor. The only representative of the Institute outside of the Americas is the Dean of the School of Pharmacy at Manila (Philippines), Dr. Patrocinio Valenzuela.

VI. A "Union Mondiale Pharmaceutique Historique"?

For many years this writer has cherished the hope that some day there would be national associations (societies, institutes, etc) devoted to the history of pharmacy in a sufficient number of countries to make possible a world organization, a kind of "entente cordiale" for the worldwide exchange of ideas, for publication and for world congresses every two or three years in one of the member countries. The list of national pharmaceutico-historical groups presented above seems to be comprehensive enough for the realization of such a superstructure. Furthermore, the mere existence of a world organization for the history of pharmacy would, in the long run, be an incentive for the founding of historical associations in countries still without one, like England and the Scandinavian Kingdoms. Preliminary steps taken by this writer and taken up and pursued with much enthusiasm by the Dutch historians of pharmacy, Drs. Brans and Wittop-Koning, have met with growing interest. The main problem is the financing of the administrative expenses. It is understood that the national organizations cannot be burdened with more than nominal fees. Hence donors will have to be found and it is by no means impossible that help could be obtained from "UNESCO", the educational branch of the United Nations.

The excellent work of unification done on a world scale by the Fédération Internationale Pharmaceutique as far as the acute scientific and sociological problems of pharmacy are concerned, and by the Pan American Congress of Pharmacy (Pan American Federation of Pharmacy) for the particular problems of the Western Hemisphere, including the adequate cultivation of the history of pharmacy, proves the value of such supernational cooperation.

VII. One for All and All for One.

In submitting this report at this representative as well as important gathering, this writer wants to state that one of his most encouraging experiences was the enthusiastic and unanimous endorsement of his plans at the First Pan-American Congress, proving the fact that with the participants from the Latin American Countries the history of their profession was not a facade adopted for business or social reasons but a part of their professional faith.

Much has been achieved, much more is still to be done. Working together, one for all and all for one, we cannot fail.

A Course of Action for the Plant Science Seminar*

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Twenty-eight years have passed since the founding of the Plant Science Seminar by the late Dr. E. L. Newcomb and a group of pharmacists and industrialists whose interests were in the biological fields. This organization was soon accepted as a major part of the American Pharmaceutical Association and from the beginning of its activities it has fostered an exchange of ideas and creative thinking in teaching methods and research in the plant sciences. The original programs, while seemingly the same as those for hundreds of

*Address of the Chairman to the Plant Science Seminar held at Niagara Falls, New York, August 1951.

similar groups sponsored by biologists, biochemists, and the like, differed only in the methods by which the objectives were carried out. The Plant Science Seminar has provided more actual laboratory experiments and field excursions during its sessions than were found generally in gatherings of this kind. These events have long been unique in the history of Seminar activities. Otherwise the verbal expressions and intercourse of thought relative to problems in the plant sciences have been conducted pretty much like any seminar.

It will be recalled that many of the early sessions of this group dealt with the problems of teaching laboratory material, particularly in botany and pharmacognosy, as newer methods became available for effectively teaching these sciences. Laboratory sessions were combined with extensive field trips into various areas rich in botanical lure and in many instances abundant in geological history. Many of the most famous museum collections, arboreta, and great natural wonders of America have been included on the agenda for Seminar members. And local secretaries have had many problems in scheduling these extraordinary tours. Incidentally, I am reminded that the headaches of present day Seminar leaders in getting overenthusiastic members to meet on time for these excursions were also apparently prevalent during the first meetings, for in the earliest report by Chairman E. L. Newcomb (Am. J. Pharm. *96*: 100 (1924), I find the following statement: "The excursion to the Minnesota River Valley scheduled to start promptly at 8:30 A.M. from the Pharmacy Building got under way as soon as Youngken (Sr.), Viehoever, Petry, and one or two others had had their breakfast—around 10 o'clock A.M. more or less."

Some programs of the Seminar have sought to include more research papers of scientific attribute and to broaden the scope of interest with the reports of scientists from areas other than pharmacy.

Thus, during the past twenty-eight years of meetings, interrupted only by a short period of World War II, when programs necessarily had to be curtailed, this organization has functioned as an integral part of pharmaceutical science. Through its activities, contributions have been made to teachers in colleges of pharmacy and to that vast reservoir of scientific facts forming the nucleus for progress in science. The efforts and ideals of the early members,

yes, and later members as well, should win the admiration of all who weigh the advances in pharmaceutical sciences.

I wish at this time to pay homage to the memory and ceaseless efforts of Dr. Edwin L. Newcomb who passed from our ranks shortly following the stimulating meetings held in Boston last August. Many eulogies with the sincerest of thought and devotion have been written about the vast contributions which E. L. Newcomb, our first Seminar Chairman, has made to all phases of pharmaceutical education and industry. It has been my privilege to read these and to compare their expressions for the memory of this genuine man and scientist. You undoubtedly share my feelings when I say that this organization shall miss the spark of the Newcomb personality during this year's Seminar and well into the future. His very personal interest was not alone in pharmacy, but also in the lives of each of us. For this, he has left a lasting impression in our hearts.

It is fitting, indeed, that this year's Seminar be scheduled in the environs of Buffalo and Niagara Falls, for in Buffalo we find one of the greatest industrial centers of America, and in Niagara Falls, an inspiring natural wonder of the world. There are several members in attendance now who will recall the Seminar meetings held nearby in Toronto in 1932. Although I have not had access to the actual program of this early meeting, and was still pretty much wet behind the ears at the time, communications reveal that some of its discussions also dealt with teaching methods and research relative to pharmacognosy and its allied sciences.

To some extent the Toronto program was also typical of all Seminar programs. It waxed heavily with ideas on teaching pharmacognosy and structural botany. There were the usual industrial and botanical field trips, the annual banquet, the interchange of good fellowship and the give and take of critical views on the role of plant science in pharmacy. These are traditional highlights and you will note that they will be a part of the 1951 program. I should like to emphasize that the good fellowship characteristics of all scientific gatherings casts a kind of binding to our clan and a stimulus for the perpetuation of hard work in its cause. Actually the cloakroom "confabs" in addition to the more formal discussions in meeting add tremendously to a dissemination of knowledge. I know that you will agree.

From time to time there have been expressions made by leaders in pharmaceutical education that the Plant Science Seminar is strictly an organization for pharmacognosists. This undoubtedly stems from the fact that a greater number of teachers of pharmacognosy have been interested in its functions from the beginning. Paradoxically, teachers of pharmacognosy are flattered to hear of this, but at the same time, fearful lest our colleagues in the allied sciences will misinterpret the expression and lose sight of the fact that this organization is intended for the voices of *all* who are interested in plant sciences.

You may recall that the excellent week-long program of the 1947 Seminar, which was held in Chicago, dealt very largely with topics pointed directly to the pharmacognosy curriculum. Much of the program was intended also for the aid of The Pharmaceutical Survey Committees who were at that time seeking to understand what pharmacognosy was all about. Benefits were gained from this and teachers left with the feeling that a more uniform and coordinated subject matter might be formulated. But one fact stood out during this meeting and that is that a freedom of thought should prevail for the effective teaching of this subject and that it should be up to the teacher to decide where he or she is to place emphasis during the teaching of the many principles involved in a study of natural drug substances and allied products, the subject which we call pharmacognosy. The Plant Science Seminar is, I believe, not intended to be an administrator to any biological field of study in pharmacy and it would be in conflict with the objectives of its founders were it to attempt to develop into an organization *exclusively* for any one biological subject, whether this be pharmacognosy, botany, microbiology, or others. May I remind you of the statement of purpose so concisely expressed in the report of the third Seminar held in 1925 at the University of Minnesota: "The purpose of the Seminar is that each worker shall have the opportunity to pursue investigations in his particular field, to demonstrate his work and methods and to discuss the results with other workers."

It is my earnest belief that although much good has been achieved from past Seminar meetings for revitalizing undergraduate teaching in pharmacognosy, botany, and other biological subjects of the pharmaceutical curriculum, the Seminar should not lose sight of its orig-

inal objectives to stimulate investigative research in the plant sciences. It would be helpful, of course, for this organization to participate whenever possible with the parent, American Pharmaceutical Association and with the Council for Pharmaceutical Education in plans to organize such events as teaching seminars in pharmacognosy and related subjects. This might even be done to the extent of sharing a portion of its annual program such as was offered by this year's officers to the Council on Pharmaceutical Education. But may I reiterate that the fundamental objective of this organization is to encourage the reports and oral discussions of research investigations in all areas of the plant sciences. This is our primary goal and by this influence teaching programs will be stimulated and kept in line with current events, and prerequisites for properly coordinating undergraduate courses will be better understood.

We are truly in a research minded age and the former abstract barriers of restricting the pursuit of scientific investigations to this or that specialized field are no longer observed by the research minded individual. Because of the advances in science and the common use of the fundamental principles of mathematics, chemistry, physics, and biology in all applied sciences one cannot adequately define any one of the applied sciences in terms of finite language. It is just as increasingly difficult to speak in terms of limiting interests for pharmacology as for pharmacognosy, for pharmacy as for pharmaceutical chemistry, and for anatomy as for physiology. This is just as true, I believe, among the many departments of pharmaceutical industry, as it is in our universities. The objectives, then, of our so-called departments of specialization are to make use of allied fields, select that which is pertinent, weave it into the present framework of the subject, and coordinate the subject with the current trends of our time. I do not mean to say that there is no justification for departmentalization of sciences, for through such funnels coordination of scientific data is achieved, persons with similar interests work closer together, and contributions to society are more efficiently made. But without wide scientific intercourse no undergraduate or graduate curriculum, regardless of the subject, can be properly vitalized, nor can industry compete successfully with its counterpart.

As we recognize this trend in our professional pursuits and daily living so also should we make use of it through scientific organizations such as this Plant Science Seminar. There should be a serious effort made to attract biological scientists to the Seminar from sources outside of pharmacy as well as from pharmacy. And the original efforts of its founders should not be allowed to die.

Truly great progress has been made in the plant sciences and this is continuing with rapid strides in those phases of importance to pharmacy. The events of Flemming, Florey, Chain, Duggar, Kamn, duVigneau and hundreds of others in antibiotic research are now history; the exploits of Geiling, Kelsey, and their associates in producing radioactive drug plant constituents such as atropine, digitoxin, etc., have stimulated further pharmacological speculation in the fields of these plant constituents. Reports emanating from Krayer's group at Harvard on the Veratrum alkaloids have, in part, been responsible for the reintroduction of this drug into clinical medicine. Many plant steroids have been found, some of which are now playing a role in cortisone synthesis. Reports from the National Cancer Institute have pointed to studies of several drug plant constituents for use in tumor research. The Egyptian plant, *Ammi visnaga* has recently become of importance in clinical medicine in the form of the drug khellin. These are fragmentary evidences of the continued interest in more applied aspects of plant sciences in medicine. It has been frequently stated that through plant chemistry and biochemistry the horizons for newer drugs and otherwise useful agents will be vastly extended.

It is unfortunate that so many of these reports must come from laboratories not associated directly with colleges of pharmacy. One should not blame reduced budgets for this, or even reduced interests, but rather the failure of our colleges to come forth with enough research salesmanship.

Fundamental researches in the areas of phytomorphology, physiology, ecology, genetics, cytogenetics and microbiology have also progressed tremendously during the past decade and one cannot scrutinize a single journal of biological scope without noting the several contributions toward the advance in our understanding of plant functions relative to these and other fields. To comment adequately on this advance would be beyond the time allotted for this address.

However, the impact of basic research on applied research is as important as a mother's milk for her hungry sucklings. The great difference is the fact that in fundamental research the milk must continue, and in ever-increasing amounts, or there can be no progress in the many schools, universities and industrial laboratories. The objective of basic science in biology is to understand the laws of nature whereas that of an applied biological science in general is to utilize and modify these laws for the improvement of the material status of our society. Some look upon the former as "luxury" research and the role of the laboratory hermit. We hear comments such as "he is too scientific". We are inclined to look more upon applied research as a kind of fruitful technology. But the fact remains that basic and applied sciences go hand-in-hand and that without fundamental research there can be no intelligent applied research.

Often the conditions that favor the development of applied research are more easily defined and remunerative than those of fundamental research. This has been a handicap in all sciences. The migration of theoretical researchers to the applied end of the spectrum is often forced by such motives as are regulated by budgets and boards of trustees. It may seem unusual therefore, that advances have been so great in the pure science field. That they are lies in the established fact that, despite its character, pure science, has in large measure, sold itself to the hard-boiled industrialists and citizens who look at all expenditures with a critical eye. The pure scientist has burrowed more deeply into the "how and why" of things than has the technologist. James Conant in his book, "Science and Common Sense" (Yale University Press, 1951) has aptly given his answer to the situation as follows:

"The record is quite clear: from the labors of those who were interested only in advancing science have come the ideas, the new instruments, which have created new industries and transformed old ones. 'Lowering the degree of empiricism' even in pure scence has eventually paid dividends in Technology."

"The answer again is to be found in the recent history of many an industry. Time and again the applied scientist utilizes the new findings of those investigators working solely to advance science; furthermore, after a time his efforts to reduce the degree of empiricism in his strictly limited applied area run into a dead end. New

concepts and conceptual schemes or new instruments and procedures are required; nine times out of ten these must come from the laboratory devoted to fundamental science."

Thus out of the fundamental researches in the plant sciences have come the newer concepts of photosynthesis by Benson and Calvin, the classical biochemical-genetics of Tatum and Beadle with Neurospora, and the theories of gene mutations by Muller, Darlington and Stadler. The contributions of Boysen-Jensen, Went, Thimann, Bonner, Mitchell and others on plant hormones and growth regulators, and the theories of alkaloid biosynthesis and movement by Dawson and James and their students, and the hundreds of other contributions by others of no less magnitude have all come from pure science investigations All have been advances during the past decade and there is good reason, despite the threat of war and reduced budgets to expect more as each year of this second half-century goes on. The fact looms large that much of the current research in the plant sciences makes use of teamwork and crosses the imaginary boundaries into the fundamental sciences of mathematics, chemistry and physics. If this is true, can the pharmaceutical scientist really be "too scientific?" The answer is an emphatic "No."

Plant scientists in the pharmaceutical areas find themselves in the middle of this "battle of the Researches." Should their research seek answers in the applied sciences or in the more basic science areas? As the rain of literature falls upon us, some are either content to be overwhelmed by it, or others go about it systematically quite like the recent study of J. W. Rizika of the Massachusetts Institute of Technology, who interpreted rainfall by a mathematical scale in his paper, "A Philomatic Study of Rain" (Amer, *Scientist*, *38*: 247-252 (1950). Newer problems are developed from the old and the modern laboratory worker grinds out more pure food for thought as he blends well the basic with the applied. Perhaps M. Moore of the Office of the Secretary of Defense has expressed it wisely as the trend involves industry, when he stated in his paper, "Pure and Applied Research" (American Scientist, 1950):

"With the rapidly widening range of present knowledge the distinction between pure and applied science becomes less sharp. Industrial laboratories are engaged in fundamental research and during the war many universities turned into weapon development centers."

What has all of this to do with the Plant Science Seminar? The answer is simple, and I believe that it suggests the course which this group has tried to follow and the course which it ought to continue. There should be an ever-increasing number of research paper and progress reports added to its program and the time devoted to their discussion should be liberal within the realm of possibility. I do not mean to imply that teaching aids and methods should be curtailed to their jeopardy. In fact, many of these illustrate good applied research. But certainly, if the number of published papers and research reports in the field of applied and fundamental research in the plant sciences, which appear annually in pharmaceutical, botanical, biochemical and pharmacological journals could serve the unit of measurement, there is every reason to believe that a small fraction of these, at the very least, could also be presented before this scientific body. If one analyzes the time for scientific papers allotted by the Scientific Section of the great American Pharmaceutical Association to which this group belongs, one finds that limits of 5 and 8 minutes per paper are the rule. I ask you, how can more than abstractness be gained from this procedure? The Association earnestly needs several outlets for the expression of its research-minded members.

I urgently recommend that the officers and members of this well-conceived Seminar adopt a policy (1) for inviting the participation of more biological scientists in its activities, not only from the laboratories of pharmacy, but by all means from the ranks of our allied scientists, fundamental and applied, and (2) solicit by invitation more scientific papers, and (3) return to the week-long schedule for meetings so that the Seminar can properly bear the fruits for which it was intended.

Obviously to attract more scientists to our programs such a course will require careful planning and administration. Nevertheless, I urge that the members seek this course even to the extent of scheduling some of the attractive papers which are to appear on the Association Scientific Section program. Remember that the scientific method in some of those which deal with plant sciences can be discussed at length before the Plant Science Seminar, whereas they are but mere abstracts as they are now presented before the parent body.

In conclusion, may I say again that we are greatly indebted to Dean A. B. Lemon, Dr. J. W. Kleber, Mrs. A. B. Lemon, Mrs. Elsie K. Rusch, and to our secretary Dr. E. P. Claus, and the many others who have worked so dilligently to schedule the 1951 Seminar meetings. I am reminded of the efforts of the housewife and cook who spend hours, yes, days, for the preparation of a festive meal which then becomes devoured in but a matter of minutes. Although this program will be consumed in a matter of days, and the proof of Dean Lemon's cooking will be in the taste of the pudding, it is generally a rule that Plant Science Seminar programs are generously tasty and of long satisfaction to even the prejudice palates of its members and friends.

Address of the Chairman of the Teachers' Conference on Graduate Instruction*

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The Teachers' Conference on Graduate Instruction is the youngest of the four Teachers' Conferences sponsored by the American Association of Colleges of Pharmacy, having been conceived at Pittsburgh in 1945, boosted into actuality as a special conference at Cleveland in 1946, and adopted as an official member of this Association with the present title in 1947. The objectives of the founders of this Conference have been to revitalize graduate instruction and research in schools of pharmacy and to provide through its annual meetings an outlet for the full debate of those many issues which are of vital concern for the proper guidance of graduate students and graduate programs in pharmaceutical sciences. This Conference has no purpose of specialization in any one of the sciences but rather has sought to encourage through its programs an exchange of thought and action on the general issues common to all pharmaceu-

*Read before the Conference of Teachers' on Graduate Instruction at the 1951 Meeting in Buffalo.

tical sciences; problems which both students and teachers face in executing sound graduate programs. I am reminded of the words of Dr. John Christian who stated in the Chairman's Address of the first official conference.[1]

"In order to build and improve instructional programs and methods to the highest possible level, an interchange of ideas and principles of graduate instruction, as well as an opportunity to discuss problems and ask pertinent questions is of utmost importance."

Much thought and time have been given by the leaders and participants of the Conference to its objective since the inception of this body. If one will scan the recent volumes of the *American Journal of Pharmaceutical Education*, where the literature record of its activities is filed, one will note that in general these objectives have been wisely followed. There have been discussions as to what the nature of graduate instruction should be, in each of the areas of pharmacy,[2-3-4-5-6] how to plan for graduate education in pharmacy,[7] the importance of graduate study and graduate degrees,[8] the role of the proposed five and six-year programs in pharmacy and graduate instruction,[9] and methods for accreditation of graduate instruction.[10]

It is, of course, true that some of these issues have also been dealt with in other teachers' conferences and in fact, on the floor of the very assembly of this Association. From all of them have come a stimulus for more graduate training and research in pharmacy and for the participation of more schools in this magnanimous program. To say that it is imperative now to raise the standards of graduate instruction in pharmaceutical areas by its very boot straps is just as appropriate today as it was in 1946.

It is encouraging to learn through a recent Chairman's report of the AACP Committee on Graduate Study[11] that in 1949 there was an increase of more than a hundred students enrolled in graduate studies in colleges of pharmacy over the preceding year. The total number of graduate students enrolled in the various colleges of pharmacy was at that time set at 440. On the other hand, it was stated by Jenkins [7] in 1947 that if we are to keep pace with the demand in all outlets for adequately trained Ph.D.'s in the four major areas of pharmacy at least 200 students should be turned out each year for the next ten years and to accomplish this not less than 400 students must be selected and started on their careers each year.

Now, when figures such as these are brought forth for debate, they immediately excite the criticism that we are attempting to rationalize the future of graduate instruction in pharmaceutical education in terms of numbers rather than quality. The arguments of the critics remind one of the age-old arguments in favor of trade unions and the closed shop. But the cold fact remains that if we are to embark on the course of placing graduate programs before the eyes of industry and education and to compete with the society of all scientists of the Ph.D., or D.Sci., levels, we must, I believe, not only take steps to increase both the number of fully qualified students and fully qualified colleges who are to be our standard bearers, but also to adjust the undergraduate curriculum to the needs of our times. Increases of the past two years are not keeping pace and the lack of many necessary hours in our basic courses is not in step with the signs of our times. It would be folly to take the view that the present cold war, or Korean situation, or even the present trend for reduced budgets is good cause for relinquishing the efforts of recent years to expand these points in our planning for graduate instruction.

The Pharmaceutical Survey and the impact of its immediate results are now history. But so are the discoveries of Duggar, Fleming, Pasteur, Ehrlich, and Koch. And like the contributions of these scientists it will take some time before the full impact of their work and the significance of The Survey and its recommendations are realized. It is hoped by the more progressive pharmacists that many of these recommendations will not be too long in germinating from the seed. We should be mindful that as contemporaries to the workings of this Survey the results of it have been cross sections of the minds of many and not the schemes of a few.

Among the vast number of proposals included under the curriculum studies by The Pharmaceutical Survey[12-13] you are familiar with those which call for more coordination and time for general education and basic sciences in our undergraduate curriculum. These were intended primarily for the undergraduate curriculum and for expanding the scope of the pharmacist's education so that it will match that of his colleagues in other public health sciences. There are those who would debate this need as it is intended for the training of undergraduate retail pharmacists. Hardly a one would

challenge the recommendations were they to apply only to the prospective graduate student. The damaging fact lies in the results and confusion which a dual kind of curriculum would provoke were it generally accepted that such should be planned to satisfy both camps; or that a selected few could be afforded more general education and basic science because they are sure to go on with advanced education.

Graduate students are not made during their first years of undergraduate study and in fact many will admit that they are uncertain as to their course even after two years of graduate study. Often uncertainty is the result of inadequate undergraduate training and poor advice. It is logical to predict that this will occur more often among those who have been greatly limited during their undergraduate careers as is now the case. I do not think that a dual kind of curriculum will solve the problem. It follows that as long as our curricula are restricted to the minimum time and effort in basic science and general education courses, so too will pharmacy be restricted in the numbers of qualified individuals from its ranks who can be considered candidates for the M.S., and Ph. D. degrees of the future.

There are those who suggest that if prerequisites for graduate training are lacking in our present boundaries let these be made up early during the career of the graduate student. To a certain limit this can be done. But one should remember that the graduate M.S., and Ph.D. programs of universities are function of the graduate schools of these institutions and are not generally programs conceived on minimum prerequisites. The current trend, in fact, is to increase certain undergraduate prerequisites and to stiffen graduate course content. Often this is a decided inconvenience for the graduate student with the present B.S. in pharmacy. He finds himself like the proverbial ship wrecked sailor on a raft—and although he possesses sail and rudder to steer the course, he lacks the necessary food and water to man them. One should remember that programs in graduate instruction are ultimately research programs. The delay in reaching the time for research because of a need to first master certain non-credit courses in basic sciences, which could very well have been included in the undergraduate curriculum, not only af-

fects the morale of the degree candidate but often influences his competitive spirit.

I need not elaborate here on the many arguments pro and con for the inclusion of added hours in general education and basic sciences for the undergraduate student who is to be the practicing pharmacist. This has been dealt with at length in the reports of others and by those of The Pharmaceutical Survey. The subject is not entirely within the purpose of this Conference. But if one summarizes the theme of these arguments and uses but four words to support them—education for our time—then common sense will dictate that no one can have too much of this to best sell either himself or his product to society. It applies to both the undergraduate and graduate student.

Recognizing the need for better guidance in our colleges of the prospective graduate student and for the inclusion of more coordination in courses in his undergraduate curriculum our Secretary, Dr. Melvin W. Green, has arranged this year's program with this thought in mind. We have, therefore, scheduled a symposium during which representatives from each area of graduate instruction in pharmaceutical education will discuss the undergraduate curriculum from the graduate instruction point of view.

We are indebted to each of these men for the time and effort, so generously devoted to this Teachers' Conference. It is hoped that time will permit for the proper discussion of the ideas herein presented. For the past several years the Conference has dealt with the mature being, i.e., the problems inherent in the graduate program itself. It is now appropriate that we examine the roots on which this being is to grow to evaluate them as they are of concern with each area of graduate instruction in the pharmaceutical sciences.

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Undergraduate Preparation for Graduate Studies in Pharmacognosy

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At present the University of California does not offer a graduate program in pharmacognosy. Therefore, in discussing undergraduate training requisite for a sound graduate program in this subject, I am somewhat in the position of the old maid who gives advice on how to raise a family. However, since I have been asked to present my views, I am glad to do so for whatever they may be worth.

Those of us who do not have graduate programs in pharmacognosy in our own schools are, nevertheless, evermindful of the needs of the superior student who may wish to make pharmacognosy his career and, with that end in view, may wish to take graduate train-

ing in this field. It is important that all students have a firm foundation in mathematics and in the physico-chemical and the biologic sciences. In fact, the calibre of the undergraduate courses in general pharmacognosy that can be presented, the ease with which they may be presented, and, in large measure, the permanent benefit the student may be expected to derive from them are directely related quantitatively to the quality and the extent of previous or concurrent training in biology, chemistry, and mathematics.

Pharmacognosy is essentially a biologic science that is based on botany, zoology, chemistry, biochemistry, physiology, and related sciences. Obviously, therefore, a sound program of graduate study and research in pharmacognosy presupposes an adequate background in each of these fields and knowledge of the fundamental principles inherent to each. Mathematics is an essential tool in different branches of all the natural sciences and hence the graduate student should be thoroughly familiar with the use of this tool and should be cognizant of its various applications. Moreover, competency in mathematics and the mathematic approach to problems should help to develop habits of objective analysis.

I am loath to commit myself to specific unit and course requirements that should be considered the minimum preparation for graduate work in pharmacognosy. I would rather say that prospective graduate students should have adequate preparation in most of the subjects listed below. These subjects are listed alphabetically irrespective of their position in the curriculum.

Physics-Chemistry	Socio-Biology	Biology	Mathematics
Anatomy, human	Public Health	Physics	Algebra
Bacteriology		Chemistry, analysis of natural products	Analytic Geometry
Biochemistry		assay of drugs	Calculus
Botany		general inorganic	Statistics
Pharmacognosy		general organic	
Pharmacology		organic synthesis	
Physiology, human		physical	
Physiology, plant		quantitative analysis	
Zoology			

The phrase "adequate preparation" cannot be defined entirely in terms of units and hours of lecture and laboratory instruction.

The minimal amount of training that can be considered "adequate" depends in large measure on the talent and capacity of each individual student and on his ability to integrate the facts and principles of the several subjects into a coherent pattern.

For sound education, the courses should be so arranged in the curriculum that there are simultaneous sequences in the biologic and in the physico-chemical sciences throughout the undergraduate program. This is preferable to the policy of permitting gaps to occur, such that during some semesters the program is heavily loaded with biologic courses with little or no chemistry, while in other semesters there are numerous courses in physical or chemical sciences and no work in the biologic disciplines.

The following scheme is based upon a four year curriculum in pharmacy following graduation from high school. If the pharmacy curriculum consists of four professional years preceded by one or two years of pre-professional collegiate work, obviously more thorough preparation can be provided. Although I do not approve of the plan of making rigid specific course and unit requirements for admission to graduate studies, in the following schedule I have indicated possible minimum semester unit values parenthetically in order to provide a basis for discussion.*

Year	Biology	Physics-Chemistry	Mathematics
1st	‡Botany (5) ‡Zoology (5)	Inorganic Chemistry (10) Physics (8)	Analytical Geometry and Calculus (6)
2nd	Anatomy (5) Physiology (5)	Organic Chemistry (10) Quantitative Analysis (4)	Calculus (3)
3rd	Bacteriology (4) Biochemistry (5) Pharmacology (5) Pharmacognosy (3 or 4)	Physical Chemistry (5) Chemistry of Natural Products (5)	Statistics (3)
4th	Pharmacognosy (3 or 4) Public Health (3)	Chemistry of Synthetic Drugs (6) Assay of Drugs (3)	Statistics (3)

*It is not meant to imply that this is the only satsifactory basic science curriculum, but it might represent the minimum undergraduate preparation for students in pharmacy colleges who intend to undertake graduate work in pharmacognosy. Exceptions should be made for students from life science or chemistry curricula. Such students would offer other subjects in lieu of some in the above list. Important deficiencies could be made up easily in the first year of graduate residence.

‡General Biology (10) can be substituted for Botany (5) and Zoology (5), but often does not prove as satisfactory a background for advanced work as do the separate courses devoted specifically to Botany and Zoology.

In schools operating on a one or two year pre-professional plus four years professional plan, some of the subjects listed under the first year in the above scheme could be taken during the pre-professional period, thus opening up the professional years for inclusion of valuable ancillary subjects, such as microbiology, plant physiology, cellular metabolism, mechanisms of drug action, genetics, etc., all of which would serve to improve the student's general background for embarking on a graduate program in pharmacognosy. However, where a one-four or two-four system is in effect, in my opinion, advisors should discourage students from trying to take too many of the courses listed under the first year above in the pre-professional years. Taking these courses in the pre-professional years tends to crowd out courses in literature, the humanities, and the social sciences which every college graduate should have an opportunity to experience. The mere fact that the students we are discussing will be professional men and women makes it all the more imperative that they have at least speaking acquaintance with such subjects.

I should like to emphasize that I consider the plan offered above, or any similar plan, merely as a guide—not as a rule to be followed rigidly. In my opinion, there is today too great a tendency in American education to be governed by rigid adherence to rules and specific course and minimum unit requirements. Often there is adherence to the letter of the rule with sacrifice of intelligent interpretation of the rule. It is not uncommon in some schools for students who have satisfactorily passed a course in statistics in another school and have been intelligently applying statistical methods in their work to be required to take several specific mathematics courses because they are prerequisites for statistics in the school to which the students are transfering. This is but one example of wasted effort and time. Similar arbitrary interpretations occur with respect to other subjects also. No useful purpose is served by such wasteful expenditure of time that could be spent profitably in sound elective courses chosen to broaden the students' background and to contribute either to their general education or to their training in the basic biologic or physico-chemical sciences. The curriculum should not be strangled with required courses in either the pre-professional or the professional years.

In this connection, I should like to quote briefly from the report of the University Commission to Advise on the Future of Psychology at Harvard, entitled "The Place of Psychology in an Ideal University". Part of this report is pertinent to our present discussion:

"Most of the current reports and policy statements on education show an almost exclusive concern with curricula and their presumed effects. No doubt well meant, this ignorance of the realities produces a strangely impractical and doctrinaire effect. Actual experience in a dean's office (or in a college physician's office) reveals quite another set of considerations, namely, the psychological adjustments of individual human beings, of teachers as well as students, to the processes aimed at in the curricula. Do not the motivations and personality of the student matter in education? Are we wise or even safe in relegating as negligible or unmanageable the varieties of student capacities, tastes, and temperaments? Does not this aspect of education in a free socley need much more attention and explicit care? We insist that it does."

Perhaps in starting with a discussion of course and subject requirements desirable for admission to graduate work in pharmacognosy, I have put the cart before the horse.

Before embarking on any training program, those responsible for its administration and execution should agree upon and clearly envision its objectives. What are the fundamental objectives of a good graduate program in pharmacognosy? I believe that an important, perhaps the most important, objective of any educational program, and especially of a graduate program, should be to develop intelligent and realistic objectivity along with the ability to see the fundamental relationships among different subjects. But this is not enough! In a graduate program we want to develop individuals who also possess the ability to formulate and to competently execute fundamental and applied research. Essentially, we want the students to acquire the scientific method and scientific habit of thinking.

With these objectives in view, I believe that emphasis in any course in the curriculum should be on the principles of the subject and critical analysis of these as they relate to other fields of study, rather than on detailed factual knowledge. Of course, a certain amount of detailed factual information will be necessary in any subject, unless one wants to become metaphysical. The minimum of facts necessary for understanding a subject will vary with the subject, with the competency of the teacher, and with the educational background and competency of the student. However, the details

of a subject can always be looked up in a reference book, but its principles and integration of these with other subjects are acquired only through competent teaching and thorough understanding of the subjects and their relationships.

Naturally, all of us teaching in undergraduate pharmacy curricula are interested in preparing students in such a way that the better ones will be acceptable to graduate schools and will be capable of doing creditable work there. But there are also other rich sources of recruits for graduate work in pharmacognosy. We should not think only of pharmacy colleges in recruiting graduate students. There are many well trained young men and women in other fields who could qualify admirably for research and teaching in pharmacognosy and who might be interested in doing so if aware of its opportunities and stimulating challenges. Some universities may already be tapping these sources. Many inspirational leaders in pharmacy are, in fact, persons who came originally from liberal arts and sciences colleges.

At my own university, upon graduation undergraduate majors in botany, biochemistry, and microbiology and in several other fields have excellent backgrounds in most of the subjects listed above. Some have expressed keen interest in further study and research in the field of modern pharmacognosy.

Most departments in major universities have a definite policy against "in-breeding"—they frown upon engaging their own recent Ph.D. graduates in teaching positions. The explanation is simple. New ideas, fresh approaches and a spirit of challenge and inquiry, which are part of the life blood of the dynamic university, tend to be lost when generation after generation of students are indoctrinated by the same methods with the same ideas.

What applies to the university at large applies also to fields of study. Perhaps it would be advantageous for pharmacognosy, while continuing to recruit some graduate students from the ranks of pharmacy, not to close its eyes to the vast possibilities for bringing into its circulation fresh blood and new ideas by recruiting students from other life sciences and even from chemistry, students whose points of view and ways of thinking have not been conditioned in the traditional pharmaceutic and pharmacognostic lines. In fact,

this may be the best, the most rapid, and most certain way to revitalize the study of pharmacognosy.

We are all familiar with the directions that dynamic research in this area may take—biochemical, ecologic, physiologic, agricultural. genetic, etc. It is not necessary to enumerate them at length. For qualified students from any of these areas of study, certain exceptions to the general scheme outlined before should be made. If necessary, important course deficiencies can be made up early in graduate residence. However, discretion should be exercised in the demands made on a student's time in this way. Certainly, it should not be mandatory for a student to complete all academic requirements for licensure in pharmacy or for graduation from a college of pharmacy in order to enter graduate studies in pharmacognosy.

The point is that it is important to attract competent individuals with good fundamental training and fresh, new, ideas, even if these individuals do not precisely meet specific course and minimum unit requirements. This is more important, in my opinion, than completion of a certain prescribed number of units in a certain set of rigidly prescribed courses. The latter policy tends to limit the possibilities for attracting fresh vigor to our field. The former policy facilitates growth of the subject in scope and in stature and offers the best hope for developing a dynamic pharmacognosy.

The Minimum Prerequisites for the Undergraduate Pharmacology Course

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This discussion of the prerequisites for the undergraduate pharmacology course in pharmacy schools comes at a very opportune time. Many schools of pharmacy are now in the process of setting up undergraduate courses in pharmacology or are revising existing courses and prerequisites.

Pharmacology is a synthetic science—many basic sciences are interwoven into the fabric termed pharmacology. Thus, the affect of drugs upon the functioning of fundamental chemical and physical phenomena, as are found in the living normal organism or tissue, constitutes a pharmacological reaction. Physiology must be placed in the same category since it is the study of the normal functioning of basic chemical and physical phenomena as are found in the living organism.

This means that students in order to gain a true understanding of pharmacology must enter the course well grounded in the physical, chemical and biological sciences. If this knowledge is lacking the best the student can achieve is the memorization of a multitude of statements. There can be little hope that he will ever be able to "think through" pharmacological problems. Such information is useless, and therefore, soon forgotten. Thus, it is evident that we must insist on certain minimum prerequisites in the chemical, physical and biological areas for entrance into the undergraduate pharmacology course.

The pharmacy curriculum as now presented includes many courses which contribute to a sound foundation for the study of pharmacology. This is true to the point that many are of the opinion that in the future true pharmacology will experience its fullest development in the field of pharmacy. Knowledge of the sources and physical properties of drugs is gained through such courses as general, qualitative, quantitative and pharmaceutical inorganic chemistry, general and medicinal organic chemistry, plant chemistry, biochemistry and pharmacognosy. The significance of dosage forms for various types of administrations of drugs is well covered in the several pharmacy courses—physical, galenical, dispensing, hospital and manufacturing pharmacy. Further useful information is obtained in such required courses as general and pathogenic bacteriology, mathematics and physics. Mathematics through calculus is a "must" for any pharmacy graduate student. In addition to these required courses there are available in some pharmacy schools many elective courses which offer excellent foundation material for the study of pharmacology, i.e., physical chemistry (required in some of the better schools), statistics, isotope tracer techniques, endocrinology, glass blowing, experimental animal physiology, public health, industrial

microbiology, etc. It is admitted that the present four-year course permits few of our undergraduates to take advantage of these elective disciplines. But it must be clear that even the present pharmacy curriculum abounds in material that is most useful to the study of pharmacology.

The greatest deficiencies as far as prerequisites are concerned is the lack of training in the biological field. It appears that pharmaceutical educators have been reluctant to include these courses in their curricula. Even today in some of our better schools of pharmacy we find substandard biological courses being offered such as physiology without laboratory training. A possible explanation for such deficiencies in a present day curriculum is that there is insufficient time available for such work in the four-year course.

What courses in biology should the teacher of pharmacology require as prerequisites for entrance into the undergraduate course? The following prerequisites are recommended by The Pharmaceutical Survey Consultative Committee on Pharmacology and Related Sciences in the Pharmaceutical Curriculum (C. W. Chapman, L. D. Edwards, R. B. Smith, M. W. Green and L. E. Blauch).

(1) **General biology,** 8 semester hours—laboratory and didactic instruction in the principles of botany and zoology. General biology is universally accepted as a prerequisite for study in any of the life sciences; therefore, there is no need at this time to justify it as a prerequisite for pharmacology.

(2) Vertebrate anatomy and histology, 4 semester hours—laboratory and didactic instruction in vertebrate anatomy and histology. This is a hybrid course and might well be replaced by standard courses in comparative anatomy and histology. The value of such courses to the pharmacy student is to supply a knowledge of the gross and microscopic structure of organs and tissues which is essential to an understanding of the functions of these structures and to appreciate the action of drugs on these same structures.

(3) Physiology, 6 semester hours—laboratory and didactic instruction in physiology. A full understanding of pharmacological principles can only be obtained where the student has a broad physiological background. This knowledge should include animal as well as human physiology. It has been pointed out by many that the above six semester hours is insufficient time to gain the objective desired by

most teachers of pharmacology. Further, some pharmacy schools are of the opinion that physiology should be taught as a professional course in the school of pharmacy. The reason given is that a course in physiology as presented by Arts and Sciences Schools often minimizes and even omits many topics considered of utmost importance in pharmacy and medicine. In any event, all teachers of pharmacology should require for entrance into their undergraduate courses the best obtainable training in physiology.

In addition to the above four prerequisite courses The Survey Committee suggested the election of pathology as an added foundation for the comprehension of pharmacological principles. This election would hardly be feasible in a four-year course, but should be possible if a longer course is adopted in the future. Pathology, obviously, offers much to the pharmacology student and to the practitioner of pharmacy.

Many will be quick to point out that most pharmacy curricula at present require general biology and physiology. This is true, and only serves to lighten our prerequisite problem.

The writer being a teacher of pharmacology is duty bound to bring up several other points concerning prerequisites. Each year some students desire to enter the undergraduate pharmacology course lacking the prerequisites as set forth in the university catalogue. Many and varied reasons are offered as to why such an exception should be made, but experience dictates that in no case is the waiver of the prerequisites justified. Also, if the student has taken the courses as outlined as prerequisite to pharmacology he will have satisfied at the same time the prerequisites of many other valuable elective courses.

From this review it is evident that pharmacy affords all the basic information prerequisite to a top flight course in pharmacology. For the moment, the minimum biological prerequisites for the undergraduate course in pharmacology for all students should consist of standard university courses in general biology, comparative anatomy, histology and physiology. Calculus and physical chemistry are highly desirable for entrance into the undergraduate course, but for the moment it will be necessary to delay these foundation courses until after graduate work has been started.

The Undergraduate Curriculum from the Viewpoint of Graduate Instruction in Pharmacy

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Any contribution which I can offer to this group on today's topic is limited to experiences at University of Wisconsin. I am ashamed to say that I have only a scant knowledge as to the nature of graduate instruction offered in pharmacy at other institutions.

We have found, in general, with our own graduates, and more so with those matriculating from other institutions, that the major background weaknesses were in the basic science area, including mathematics. This is to be expected since it is extremely difficult, if not impossible, to fit into the present four year undergraduate professional pharmaceutical curriculum a sufficient number of coordinated basic courses which would permit the students to enter into graduate studies on a satisfactory graduate level. It must be kept in mind that both the doctor of philosophy and master of science degrees are granted on the basis of academic and scholarly achievements rather than on the basis of skill acquired in practicing an art.

The course deficiencies among the entering graduate students have greatly hampered our graduate research programs. In the first place the new students spend large share of their first two years satisfying the basic requirements. They are not, furthermore, permitted in the graduate courses in pharmacy until they have had a year of calculus and a year of physical chemistry. Even more important, they lack on matriculation the necessary tools for prosecution of pharmaceutical research on an acceptable level.

Contrary to the belief of some, research in pharmacy requires the best of basic preparation. The systems encountered in pharmaceutical research are usually extremely complex both physically and chemically. Inadequately trained investigators are apt to be quite helpless in attempting these problems and are forced to resort, in many cases, to solution by strictly trial and error approach. For this reason graduate research in pure pharmacy should be attempted

only by well trained workers with very broad and sound basic background.

The following additions to the undergraduate curriculum of those contemplating graduate work are suggested as being highly desirable in providing the necessary foundation.

1. **College mathematics through calculus.**
2. **A year course in physics based on calculus as prerequisite.**
3. **A special semester course on physical chemistry with calculus as prerequisite.**
4. **A semester course of physical pharmacy with physical chemistry as prerequisite.**

These additions to the undergraduate curriculum will provide the pharmacy graduates with sufficient scientific tools, to tackle graduate work in pharmacy on a proper academic level.

The Applicant for Graduate Study in Pharmaceutical Chemistry

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The undergraduate training desirable in a prospective pharmaceutical chemistry major, is generally predicated on the individual department head's concept of the science of pharmaceutical chemistry. Consequently, it is expected that opinions concerning the undergraduate training of such students could be subjected to the same rather of pharmaceutical chemistry in previous graduate teachers' conferindecisive debates that have characterized discussions of the nature ences. Suggestions concerning undergraduate training that will be presented herewith will probably be most acceptable to those who regard pharmaceutical chemistry as a borderline science in which a strong chemistry component is supplemented by an almost equally strong component in biological sciences, especially pharmacology and bacteriology. The practitioner in such a science should be schooled in the disciplines of chemistry that will eventually enable

him to synthesize and analyze medicinal products and in the disciplines of biological sciences that will eventually enable him to make intelligent decisions about what substances should be synthesized and analyzed. Such a dual capacity distinguishes him from the organic or analytical chemist who knows how to make or test a drug and a pharmacologist who knows what drug should be made or tested. The stigma on the division of science which is known as pharmaceutical chemistry that is quite obvious in the attitude of many persons and manifest in the medicinal chemistry titles of books with pharmaceutical chemistry content is probably the result of a minimizing of chemistry or biology or both in the training of the pharmaceutical chemist, or an over-emphasizing of some specialized or applied branch of either science. The prestige of the pharmaceutical chemist must depend on his ability to render a unique and difficult service and on the utility of the service rendered.

Knowledge of the galenical, compounding and production aspects of pharmacy is often a controversial issue in evaluating an application for graduate training in pharmaceutical chemistry, and a careful delineation of the scopes of endeavor in the fields of pharmacy sciences, especially pharmacy in a strict sense and pharmaceutical chemistry is required. If one subscribes to the idea of a synonymy of the two fields, then a distinct field of medicinal chemistry which all too likely would exist outside of the profession of pharmacy, is justified. On the other hand, if the autonomy of the two phases of pharmacy science is recognized, a division of labor within the profession results, with an undoubted benefit to the profession as a whole. Such a division is recognized by the pharmaceutical manufacturer, because successful competition in his rapidly changing market has proved the efficiency of the complementary services of men trained in compounding, manufacturing, etc., with others trained in synthesis and analysis in "preparing from crude vegetable, animal and mineral substances and chemicals, materials in suitable and convenient form for use as drugs"; i.e., in the practice of pharmacy according to a recognized definition (Guidance Leaflet No. 14, W. J. Greenleaf). Attainment of such a common objective can probably be best realized by persons with common traditions and interests even though the nature of their services appears heterogeneous to a casual observer. Accordingly, an under-

graduate training in pharmacy preceding a graduate training in pharmaceutical chemistry is considered by many to be desirable and by some to be indispensible.

Granting that a majority of teachers of graduate-level courses in pharmaceutical chemistry consider the graduate of a pharmacy school as the most acceptable registrant in those courses, a certain compromise with reality is necessary in establishing a starting point in the graduate program of the applicant. As far as the major subject is concerned, the applicant might be considered eligible for registration in the most elementary courses in pharmaceutical chemistry, such as chemistry of organic medicinal products or advanced organic chemistry, if he has had the usual collegiate training in general chemistry (1 year), qualitative analysis (½ year or equivalent, quantitative analysis and drug analysis (1 year), elementary organic chemistry (1 year), physics (1 year) and pharmacology (1 year) together with the prerequisites for pharmacology in the other biological sciences. The same undergraduate courses coupled with sufficient German to provide a reading knowledge of such reference books as Beilstein, etc., would qualify the applicant for a course in organic qualitative analysis.

The average college of pharmacy offers a little less than 1½ years in general chemistry and qualitative analysis, 1 year in quantitative analysis and drug analysis and 1 year in elementary organic chemistry,—all of which more than satisfies the above arbitrary requirements in chemistry courses, provided course content and student's comprehension are consistent with credit hours and grade as they appear on his record.

One is inclined also at this point to scrutinize carefully the student's record in biological sciences, because a sufficient training in biological sciences through pharmacology is necessary for proficiency in many of the graduate courses in pharmaceutical chemistry and also as prerequisites for graduate courses in pharmacology which are usually taken starting with the second year of the graduate program in the case of a student who meets only the minimum requirements for entrance. It is sometimes necessary to devote part of the first year of graduate training of a pharmaceutical chemist to correction of deficiencies in the biological sciences,—not only as re-

gards pharmacology itself but also its prerequisites of zoology and physiology.

The applicant from a college of pharmacy frequently has deficiencies in language requirements and sometimes is inadequately trained in physics. A reading knowledge of German might be considered imperative and a similar knowledge of French, desirable.

If a student does have the above undergraduate background, he could then devote about one-half of his first year in graduate level course work in pharmaceutical chemistry, such as chemistry of organic medicinal products; or, if he had a comparable course as an undergraduate, the same time could be devoted to a course in advanced organic chemistry. Either of the courses could be supplemented by a laboratory or, in place thereof, a course in organic qualitative analysis. Most students also require instruction in glassworking during their first year and this might be done informally, in conjunction with one of the above laboratory courses or in a separate course.

Usually it is necessary to devote the remainder of the student's time during his first year, to the study of physical chemistry. In addition to a satisfactory undergraduate training in physics already mentioned as prerequisite for graduate chemistry courses, the applicant must have had courses in collegiate algebra, trigonometry and analytical geometry equivalent to one or one and one-half years of study. Previous training in calculus is frequently lacking in the applicant and concurrent registration in that subject and physical chemistry is an expediency of very dubious acceptability. It is advisable that the prospective applicant for graduate study in pharmaceutical chemistry be encouraged to study calculus, possibly as an elective, during his undergraduate program, even at the expense of elective courses in what will be his major field, viz., pharmaceutical chemistry.

In summary, the necessity that the qualifications of the applicant for graduate training in pharmaceutical chemistry depend on the attributes desired in the product of such training, must be recognized. It is hoped that many will subscribe to the belief that rationalization of empirical facts concerning structure, physical, chemical and physiological properties of substances now used as drugs and the ability to apply that reasoning in production of new drugs with more de-

sirable physical, chemical and physiological properties is the contribution that a pharmaceutical chemist should be able to make in the collaborative effort of a number of specialists practicing within the pharmacy profession to render a better pharmaceutical service.

Graduate Instruction in Pharmacology—Qualifications of Staff and Students

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Graduate study in pharmacy is offered in five major fields of specialization, namely, pharmacy, pharmaceutical chemistry, pharmacognosy, pharmaceutical administration, and pharmacology. Advanced degrees in the first four fields can be obtained only in colleges of pharmacy. As a result, the objectives are fairly uniform, although the quality of such training may vary considerably depending primarily upon the ability and ingenuity of the man who directs the program. On the other hand, advanced degrees in pharmacology may be obtained either in a college of pharmacy or a college of medicine. This at once imposes an unusual responsibility on the colleges of pharmacy that presumes to offer graduate instruction in pharmacology. There are certain differences in the objectives of graduate training in pharmacology offered in colleges of pharmacy and in colleges of medicine, nevertheless, these objectives are sufficiently similar so that only that college of pharmacy which can offer work comparable with that offered in a college of medicine should attempt to offer the doctorate degree in pharmacology. It should be remembered that pharmacology was originally fostered by the medical schools and presumably should have attained its highest level of academic excellence in these institutions. Unfortunately, this view is not uniformly accepted. Irrespective of this opinion, unless the graduate who has been trained in pharmacology in a college of pharmacy has an education at least equal to that of the medical school

trained man he will find himself seriously handicapped when it comes to securing one of the better positions in industry, food and drug administration laboratories, research foundations or educational institutions. In the writer's opinion, there are but very few departments of pharmacology in pharmacy colleges that are prepared at present to offer the Ph.D. degree. For the benefit of other schools it is of interest to note here the necessary minimum qualifications of staff and students for a creditable graduate program in pharmacology.

Qualifications of the staff. In general, the same rigorous requirements concerning staff should apply to the department of pharmacology which plans to offer graduate instruction in pharmacology as apply to the various divisions of a Graduate School in our better universities. The biggest hurdle, therefore, is the number of staff members in the department. Rarely, if ever, is a department permitted to offer graduate instruction to the Ph.D. if there is only one professor in that department. It is realized that such a requirement of multiple staff members will automatically exclude the vast majority of colleges of pharmacy from graduate instruction in pharmacology. However, under certain circumstances, a department which has only one or two staff members may undertake graduate instruction. Such circumstances would obtain when the college of pharmacy is closely allied with an active university graduate school in which graduate courses in biochemistry, physiology and other ancillary fields are offered.

The faculty member directly responsible for graduate instruction in pharmacology must have a doctorate degree in pharmacology and must have published sufficient meritorious independent research to enjoy the full confidence of his colleagues. Indeed, he must be actively engaged in research.

The faculty of a college of pharmacy offering graduate instruction in pharmacology must be "strong" in the sense that its members are recognized for their research contributions in their respective fields. Such recognition can only be gained if the faculty members do fundamental research and are active in their respective professional societies.

Qualifications of students. Admission to graduate work in pharmacology should be granted only to graduates of accredited col-

leges of pharmacy. Undergraduate training should include,—in addition to the usual courses in pharmacy, pharmacognosy and pharmaceutical chemistry,—inorganic, organic, qualitative and quantitative chemistry, physics, biology, bacteriology, and physiology, and, a year's course in pharmacology. In addition, the student should have courses in mathematics through the calculus, or should complete these during his graduate work.

The general ability of the graduate student is, to a large extent, reflected in his scholastic record. The scholastic record may be used as an indication of his intelligence, memory, industry and general interest in education. However, other qualifications, such as a sincere interest in pharmacology, judgment, ability to read and interpret the scientific literature, and manual dexterity, should be taken into consideration. In addition, the graduate student should have the necessary physical and mental stamina to enable him to make the necessary adjustments to graduate work and to withstand the long hours of work and study required for the doctor of philosophy degree. Some of these qualities can be determined by personal interview, by a graduate record examination, and by previous experience with the applicant. Finally, the student who presents all of these qualifications should only be accepted for graduate study with the realization that all professional careers in pharmacology are concerned with research and that the lifetime occupation of all candidates for the doctor of philosophy degree in this field involves original investigation irrespective of the specific position finally accepted.

Marriages

Mr. James M. Irwin and Miss Muriel De Rose, instructor in biological sciences, Rutgers University, College of Pharmacy, on October 6, 1951.

A Course in Graduate Orientation and Research Indoctrination*

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The pharmacy student entering upon a graduate program of study too often is confused by the totally different educational approach existing at the graduate level, and frequently is not prepared to carry out the processes of creative thought and critical evaluation so necessary to the planning and execution of a scientific research problem.

With the twofold purpose in mind of easing the student's adaptation to the graduate curriculum and providing him with an understanding, in part at least, of the stages of a research problem, the Graduate Faculty of the Temple University School of Pharmacy has initiated a course of specialized training entitled "Graduate Orientation and Research Indoctrination". The course, in which all entering graduate students are required to enroll, is conducted one hour each week for two semesters and carries two semester hours of credit. It is given by the Graduate Faculty, each member delivering at least one lecture on a subject about which he is particularly well qualified to speak. For the treatment of certain topics, members of industry, specialists in visual education, and others are called in to deliver certain specialized lectures to the students.

Following is an outline of the topics presented in the course as delivered in the 1950-1951 session.

1. **An Introduction To The Graduate Program**
2. **Rules and Regulations Of The Laboratory**
3. **Research In Industry And In The University**
4. **Personnel Demands For Research In Industry**
5. **Choosing A Research Problem**
6. **The Library And Its Use**
7. **A Survey Of Scientific Literature**
8. **Planning And Developing The Research Problem In Industry**
9. **Planning And Developing The Research Problem In The University**
10. **Statistics In Research**

*Presented before the Conference of Graduate Teachers of Pharmacy at the 1951 meeting at Buffalo.

11. A Brief Survey Of Instruments Used In Research
12. Graphical Representation Of Data
13. Writing For Publication
14. Oral Presentation Of The Research Paper

The first lecture, "An Introduction To The Graduate Program", includes a statement of the scope and objectives of the graduate program in the university. It is delivered by the Dean of the School or the Chairman of the Graduate Faculty.

Following the introduction, a discussion of the "Rules And Regulations of The Laboratory" is given. This topic includes reference to conservation of utilities and expensive chemicals; precautions regarding fire and explosive materials; and other measures designed to maintain the highest degree of safety and efficiency in the laboratory. A mimeographed list of the rules and regulations is given to each student and is posted in each laboratory.

"Research In Industry And In The University" should be discussed by a member of the faculty or a speaker from industry who has had experience in directing research both in industry and the university. The two types of research, often quite different in many respects, can be compared and contrasted to provide a very interesting and informative lecture.

The graduate student is naturally keenly interested in the qualifications needed for a position in the pharmaceutical industry, and toward these desires, the lecture on "Personnel Demands For Research In Industry" is directed. The research head of a nearby pharmaceutical manufacturing company is asked to deliver this talk and should be encouraged to speak in terms of the advantages and disadvantage of industrial work, type of positions open to the Master of Science and Doctor of Philosophy, the necessary personal attributes of an industrial research worker, and the salaries and opportunities for advancement.

"Choosing A Research Problem" is often confusing to the beginning graduate student. The methods should be discussed for deciding upon a problem which will be acceptable for presentation as a thesis and, at the same time, will not be too involved for completion in the limited time. Such questions as scope of the problem, availability of apparatus, expense of the project, and technics involved must be considered in the intelligent choice of a research problem in the university.

The librarian of the school introduces the student to "The Libray and Its Use". She may explain and demonstrate the method of conducting a library search, the classifying and recording of references, use of abstracts, encyclopedias, dictionaries, and other pertinent information. This lecture should be of vital interest to the student, since it acquaints him with one of his most important tools —the library. The use of abstract journals and indices is emphasized as a means of saving time in any literature search.

This discussion is followed by "A Survey of Scientific Literature" which may be given by the librarian or some member of the faculty who is particularly interested in the topic. Journals and texts dealing with pharmacy and allied fields are discussed.

"The Planning and Developing Of The Research Problem In Industry" is a subject which the Director of Pharmaceutical Research and Product Development of a manufacturing firm can discuss with authority. One of the members of the graduate teaching staff can deliver "Planning And Developing The Research Problem In The University". This includes a discussion of the nature and definition of the problem, initial planning and exploratory research, the plan of work, experimentation, use of the research notebook, preparation of progress reports, and interpretation and summarization of results.

Statistical treatment of data is reserved for the series of lectures entitled "Statistics In Research" which includes a discussion of the theory of errors, significant figures, and statistical analysis of research data. Six to eight hours are required for the development of the topic with any degree of completeness. This introduction to the science of statistics is not designed to provide the student with sufficient knowledge to enable him to apply the statistical method, but rather to give him an appreciation of the field so that he may know the limitations of routine laboratory procedures and may appreciate the usefulness of statistical methods in analyzing data and calculating its degree of reliability. It is assumed that the student will undertake further study in the field or will consult a professional statistician if he engages in work which requires the application of statistical analysis.

"A Brief Survey Of Instruments Used In Research" is given by one of the members of the graduate faculty. As with statistics, the several lectures dealing with instruments will not provide the

student with the technical knowledge for efficient application of instrumental analysis but will, it is hoped, indicate to the investigator the possible use of cerain equipment in the experimental work. In addition to the lecture, the students spend a suitable period of time in the laboratory observing the operation of the spectrophotometer, pH meter, viscometer, refractometer, and other commonly used instruments. Most graduate schools include a detailed course in instrumental analysis which the student may take at a later time.

The lectures concerning the "Graphical Representation of Data" should be presented by a specialist in visual education. The students are taught the use of drawing instruments in the construction of graphs and are familiarized with photographic methods employed in the preparation of prints and slides.

The regulations for the preparation of the graduate thesis are spelled out in detail in the discussion, "Writing For Publication". The student is provided with a mimeographed style-book which contains the rules regarding the format of the thesis, size and type of paper, requirements for the title page, table of contents, tables and figures, bibliography, abstract, and other pertinent information regarding the preparation of the research thesis. This talk is followed by a discussion of the form into which a research paper must be cast before submission for publication to the editor of a scientific journal.

The course in *Graduate Orientation and Research Indoctrination* is terminated with a lecture on the "Oral Presentation Of The Research Paper". This discussion is concerned with two topics: the defense of a research thesis before the graduate faculty, and the oral presentation of a research paper before a scientific society. Some of the fundamentals of public speaking are discussed by a member of the staff who has considerable training along these lines.

Any time remaining at the end of the course is devoted to a review of research problems in progress presented by advanced graduate students. Projects are discussed in such a way as to demonstrate the application of the various steps which have been studied as proper in the development of the research problem.

A final examination may be given at the completion of the course, but it has been found in our experience that this is not necessary to assure the attendance and attention of the class.

The Value and Importance of Prescription Surveys to Colleges of Pharmacy

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It is well known that the historic functions of the pharmacist as a manufacturer of pharmaceuticals and as a compounder of prescriptions have undergone marked changes in the past three or four decades. During the last ten years this metamorphosis has been so profound that the fabrication of drug products in the retail pharmacy has all but disappeared. For example, in 1927, 79.63 per cent of prescriptions required the use of basic pharmaceutical technics for their preparation[1] and by 1946, compounding skill was required in only 25.9 per cent of the prescriptions filled.[2] This trend has continued until in 1952 in Utah, only 7 per cent of the new prescriptions filled require any pharmaceutical manipulation[3].

Pari passu with this change of character the profession has enjoyed a tremendous increase in the number of prescriptions filled—nearly 30 per cent between 1944 and 1950[4]. Most of this gain in prescription volume is due to the increased prescribing of single ingredient medication and to the growing multiplicity of manufacturers' specialties. Ninety-three per cent of all prescriptions filled in Utah at the present time are for single drugs and 75.4 per cent are for pharmaceutical specialties[3].

The increase in the number of prefabricated drugs and specialties is a natural consequence of the development of more specific medication and the recognition by the physician that single ingredient prescriptions may be adjusted more readily to the patient's needs. The Pharmaceutical Survey[5] has called attention to the fact that the output of new drugs and specialties is so great that "it becomes increasingly difficult for the physician to keep up to date concerning available drugs and to weigh their merits against those of longstanding and established use. The logical person to whom the physician should be able to turn for scientific information is the pharmacist who, being a specialist in drugs, should keep himself well informed concerning the merits of the various products." As the distinctive compounding responsibility of the pharmacist has been diminished

by the development of large-scale, scientifically controlled production, his professional responsibility has been enlarged by the ever-increasing number of new therapeutic agents so that he finds himself functioning more and more as a "consultant in drugs."

Unfortunately, many colleges of pharmacy have been slow to recognize their responsibilities in training pharmacists to meet these new conditions. Therefore, it was thought worthwhile to call attention to the findings of recent prescription surveys and to illustrate the value of such studies to those concerned with the training of pharmacists. This is in accordance with the recommendations of The Pharmaceutical Survey[6] "that each college or school of pharmacy undertake to conduct periodic study of the prescriptions currently written in the area served by the institution." Because of the dynamic nature of the practice of pharmacy and medicine, such a study must be a continuing one. This would eliminate the main disadvantage of previous surveys—the fact that their findings were usually obsolescent by the time they appeared in print.

Having made a survey, what use should the colleges make of the information obtained? Perhaps the most important applications which could be made are in formulating and modifying curricula and in planning course content. Curriculum design is governed by many factors which need not be enumerated here. The part played by a prescription analysis, however, should be one of indicating the relative emphasis which should be given the various disciplines in order to accomplish the objectives of the undergraduate program for the education and professional preparation of the pharmacist. What are these objectives? The Curriculum Committee of the Pharmaceutical Survey has defined them, among other things, as "Preparing students to procure, develop, prepare, preserve, standardize, test, and dispense substances and articles used in the diagnosis, treatment, and prevention of disease."[7] These functions are embodied in the time-honored definitions of pharmacy. In addition, the evolutionary pattern of the profession has brought about the inclusion of still another pedagogical objective, namely "Qualifying students to cooperate with members of the other health professions and to consult with them; to furnish accurate, objective, and scientific information to physicians and members of other health professions concerning drugs and their action."[7]

From a practical viewpoint one must admit that the functions indicated in these objectives are not of equal importance. Certainly very few pharmacists are called upon to develop, standardize, or test pharmaceuticals in the busy store of today. It has already been indicated how little preparing is done, and with most modern medicinals there is little problem of preservation. Obviously then, since the most important of these functions are procurement, dispensing, and consultation, curricular emphasis should be directed toward these areas.

Although prescription surveys may indicate the need for increased emphasis in one or more of the pharmaceutical disciplines, it should not be assumed that the other disciplines have become of such lesser importance that they should be discarded. There are always those who are eager to attach the "deadwood" label to courses which have, to them, no apparent practical application. Pharmacognosy is a case in point. So long as any drugs from natural sources or the active principles of those drugs are in use, the need for pharmacognosy instruction will continue. In addition, one cannot overlook the historical contribution which this discipline has made to pharmacy, which should justify its continued inclusion in the curriculum even though the emphasis has shifted elsewhere. Likewise, the fact that only a small percentage of our prescriptions are compounded does not mean there is no longer a need for operative pharmacy, since it is obvious that the pharmacist still must know how to compound that small percentage. In addition, one should avoid a slavish adherence to prescription studies since this may result in neglect of technics which should be basic to a pharmacist's training although they may be used only occasionally. Surveys indicate trends and one's teaching can be modified to follow general trends.

While current surveys do not suggest a radical change in present day curricula, they do indicate the need for constant revision of individual course content. Let us consider the value of prescription analyses to courses in the five major disciplines of the curriculum.

In the area of pharmaceutical administration surveys may be utilized to provide valuable course information on the selling prices of prescriptions which will be of assistance in teaching the importance of uniform prescription pricing within individual stores and

will provide a basis for devising or improving pricing schedules. They may also provide a basis for calculating actual prescription costs as well as illustrating to the student the higher gross margin from the professional part of pharmacy. When compared with figures on total gross drug store sales and cost of sales, a prescription survey can be used to show the contribution of the prescription department to total net profit. Finally, one of the greatest contributions which can be made to courses in pharmaceutical administration is a demonstration of the need for stock control in the prescription department.

The teacher of pharmaceutical chemistry can also learn from a survey the areas in his instruction which should be spotlighted and those which may be de-emphasized. In view of the changing function of the pharmacist, it is most evident that courses in this field should prepare the student to understand the mechanism of drug action and particularly structure-activity relationships. Prescription surveys would seem to justify a pharmacological classification in the teaching of pharmaceutical chemistry, especially organic medicinal products. As adviser to the physician the pharmacist will be expected to be expert in the chemical relationships of drugs in the various therapeutic classes and this status may be reached most easily by the pharmacological approach. Current surveys show that the pharmacist of today may expect to encounter very few incompatibilities. Thus, the teaching of chemical and physical properties of compounds should be more generalized to provide the student with a flexible knowledge which may be applied to new situations arising with future drugs. Also the importance of including specialties in the instruction along with official drugs is emphasized by the fact that only 24.6 per cent[3] of the medicinals currently prescribed are U.S.P. or N.F. Trade names should also become a part of the pharmacist's working vocabulary and introduction to them may be made here.

Although there are those who will regard current pharmaceutical practices, as reflected by prescription surveys, to be nails in the coffin of pharmacognosy, an intelligent analysis of the information available will indicate otherwise. These analyses do show the necessity of adopting newer concepts concerning the teaching of this subject. Certainly the majority will agree that the memoriza-

tion of useless information such as botanical origins is valueless. However, the student must be familiar with the active principles of plant drugs whether they be obtained largely from the natural source or are synthesized. He also should be made to appreciate the problems involved in obtaining these active principles in pure form as affected by the part of the plant used, growing and harvesting conditions, cell structure, etc. Surveys would definitely point out, of course, those drugs of natural origin which should receive major emphasis.

Since the logical common ground of the physician and pharmacist is in pharmacology, it seems that the objective of interprofessional cooperation and consultation may best be achieved through increased emphasis upon this discipline. It is obvious that the pharmacist's background in pharmacology must be equal to or better than that of the physician if the pharmacist is to command the respect and confidence of the physician. It is particularly important that the pharmacist possess a usable professional vocabulary, the development of which should be especially stressed in this area. Specifically, prescription surveys indicate those therapeutic groups in which the pharmacist should be most thoroughly informed. They also show the individual medicinal agents in each classification which should receive the greatest attention. By pointing out those drugs which are currently being prescribed, a survey may serve as a warning to the pharmacist—and in turn the physician—of how he may be "taken in" by overzealous manufacturers.

To the discipline of pharmacy the prescription survey will show the pharmaceutical classes of medicaments currently being prescribed and their relative frequency of use. This again will indicate the direction of emphasis redistribution which is necessary. Bear in mind, however, that although surveys may show the current relative importance of various pharmaceutical technics, it should be remembered that basic pharmacy courses have a pedagogic value which enhances the student's understanding and appreciation of other dosage forms which require little or no compounding on the part of the pharmacist. For example, tablets, which are the most frequently prescribed dosage form, are rarely manufactured by the pharmacist, but intelligent handling, storage, etc., as well as providing

information to the physician, require a knowledge and appreciation of the technics of tablet making.

Finally, it should be emphasized that colleges of pharmacy cannot resist the trends in retail pharmacy by ignoring the findings of prescription surveys. Such studies indicate where the emphasis must be placed in the various pharmaceutical disciplines in order to train the pharmacist to the point where he can contribute intelligently and be of real, practical service to the other health professions.

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Business Publications of Value in Teaching Pharmacy Administration*

PAUL C. OLSEN

It has been my experience as a teacher that there is a real interest among pharmacy students in the figures that are published periodically on sales, costs and profits of business enterprises in the drug trade. These published figures may be divided in two groups. The first group consists of the figures on sales, costs and profits that are published for individual companies. The most complete source of this information is in Moody's Manual of Industrial

*Presented before the Conference of Teachers of Pharmacy Administration at the 1951 meeting at Buffalo.

Securities. This publication consists of an annual volume of the bulk of an unabridged dictionary. It also includes semi-weekly loose leaf supplements.

Moody's Manual and these supplements are to be found in the reference department of the public libraries and in libraries of collegiate schools of business. They are a necessary part of the reference libraries of securities dealers.

I am indebted to Dean John F. McCloskey of Loyola University College of Pharmacy at New Orleans, Louisiana for the suggestion that when a new annual volume appears these securities dealers are glad to donate the previous year's volume for student use. Thus, Dean McCloskey has enriched the reference library at his college with this important volume. It contains statements of income and expense year by year and statements of assets and liabilities for many of the largest manufacturers of prescription products. It contains similar figures for proprietary medicine makers and for makers of cosmetics and toilet preparations.

There are also financial facts of a similar nature for wholesalers and for chain drug stores. Inasmuch as other types of retailers deal in many of the articles sold also in drug stores, there is interest, in addition, in the statements of income and expense and assets and liabilities to be found in Moody's Manual of Investment Securities for department stores and for variety stores.

The drug trade is characterized by a number of suppliers which are, in fact, holding companies for numerous subsidiaries. Among these companies are the American Home Products Co., Sterling Drug, Inc., William R. Warner and Co., and the Vick Chemical Co. Moody's Manual provides a quick and comprehensive reference guide to the subsidiary organizations grouped under such headings. The volume also includes the names of brands sold by the various subsidiaries and the names and addresses of officers and directors. For chain store companies there is, in addition, information on the number of stores and the cities and states in which they are located

Merrill, Lynch, Pierce, Fenner and Beane, which is the largest securities dealer in the United States, publishes annually a compilation of these figures for chain stores. This compilation, which is in pamphlet form, is distributed free to persons interested. The inclusion in it of figures for chain drug stores and for retatilers in

lines of trade competing with drug stores, makes this pamphlet a useful addition to the library of a college of pharmacy. A request for it should be directed to any of the nationwide chain of offices operated by Merrill, Lynch, Pierce, Fenner and Beane.

In addition to these figures on sales, costs and profits for individual companies there are also general compilations and averages in which pharmacy students seem to find interest. For manufacturers the most complete compilations are to be found in the U. S. Census of Manufactures. The most recent Census of Manufactures covered the year 1947. The next is to be for 1953 and then every five years after that. The results of these censuses are published as pamphlets and bound volumes.

For quick reference to summary and total figures the annual editions of the Statistical Abstract of the United States provide the simplest way of getting at this information. The figures summarized there include number of establishments, value of products, gross margins, costs of materials used, number of wage earners and wages paid. Separate figures are published for manufacturers producing the different types of products that make up the drug trade.

The Association of National Advertisers publishes, annually, the expenditures of leading advertisers. Inasmuch as the drug trade characteristically spends proportionately more of its income for advertising than virtually any other branch or trade or industry the Association of National Advertisers' compilations necessarily include the leading drug trade advertisers. These compilations are reported in Drug Trade News and other trade publications. These secondary sources are ordinarily sufficient for pharmacy students.

For wholesalers the National Wholesale Druggists' Association regularly publishes and makes available not only to the trade but also to students and others interested, its compilations of wholesale druggists sales, margins, costs and profits. In addition, the National Wholesales Druggists' Association has pioneered in the compilation and issuance of figures which show the variations in handling costs for individual items and groups of items sold by wholesale druggists.

For retail drug stores the most comprehensive annual compilations of sales, margins, costs and profits are those issued by Eli Lilly and Company as the Lilly Digest. Annual editions of the Lilly Digest have been published for each year starting with 1932.

The National Association of Retail Druggists, in affiliation with other trade groups, has in process of completion a study which is intended to reveal the variations in individual handling costs for the various lines of merchandise and service sold in drug stores. This is comparable in importance and value to the study of these costs for wholesalers that has been made by the National Wholesale Druggists Association.

Department store sales, margins, costs and profits are compiled in annual reports for the National Retail Dry Goods Association and published by Harvard University Bureau of Business Research. Such reports have been issued each year since 1919. They are available to educational institutions at prices of $2.00 to $3.00 for each annual edition.

The Controllers Congress of the National Retail Dry Goods Association has published, also, annually in recent years, a compilation of margins and costs by departments in department stores. These compilations also include figures on the average sale by departments, losses resulting from mark-downs and direct salary costs.

The Harvard University Bureau of Business Research has published for the Limited Price Variety Stores Association for the past two decades a representative compilation of sales, margins, costs and profits of variety chain store companies. Inasmuch as the variety chain store companies obtain about five-sixths of the sales in the variety trade, these annual reports are therefore characteristic of the predominate part of the variety trade.

Dun and Bradstreet has published, from time to time, in its monthly magazine, Dun's Review, and in summary volumes a useful collection of statistics called Financial Ratios for Wholesale and Retail Trades. For the student who is analytically minded and who has talent in the analysis of statistical reports, these Dun and Bradstreet studies are a fascinating field of investigation.

A third group of figures about the drug trade which deserves attention are the published reports of monthly sales of retailers and wholesalers. The Walgreen Co. and Peoples Drug Stores, Inc. are the only chain drug store companies which make public each month their own sales totals. These appear in metropolitan newspapers and also in the semi-weekly supplements to Moody's Manual.

Estimates of sales totals for chain drug stores, for individual drug stores and for retailers in other trades appear in a monthly publication, The Survey of Current Business that is published by the U. S. Department of Commerce. The $3.00 a year subscription price for this publication is a useful expenditure for any college of pharmacy library.

Monthly sales figures appear also in the Survey of Current Business for the wholesale drug trade and for other lines of business. The chief disadvantage of the Survey of Current Business is the lag in the publication of these monthly sales figures. The Survey of Current Business reaches its subscribers about the 25th of the month with estimates of retail, wholesale and other sales for the second preceding month.

The U. S. Census of Retail Trade has been found to contain figures of great interest to pharmacy students when the existence and importance of these figures is explained to them. The most recent census of retail trade covered 1948. In this census, for the first time, the retail establishments which have the appearance of drug stores but which do not operate prescription departments or furnish professional services, have been separated from drug stores. These other stores are designated in the 1948 census as "proprietary" stores. This separation is expected to help to settle the longstanding controversy as to the number of drug stores in the United States as distinguished from those other establishments which, in previous censuses, have been enumerated as drug stores.

Separate figures are generally available for drug stores and proprietary stores for each county and for other places with a total of 200 or more stores of all kinds. These compilations also show the corresponding figures for the total sales of these stores. Pamphlet editions have been printed in the past year for all states. A summary edition is also now available from the U. S. Government Printing Office in Washington, D. C. and the U. S. Department of Commerce branch offices throughout the United States. The price of these state editions is 10 to 50 cents each, depending on the size of the state. This publication in the census of number of drug stores and their total sales makes possible a study within any particular state or section of the country of the variations in the average sales per store. Students and pharmacy graduates have used

these figures with success in deciding localities in which they will look for a place to buy or open a drug store.

The 1948 census contains, also, a report on the wholesale drug trade. Separate figures are supplied which show the number of full line wholesale druggists and the limited service wholesalers. In addition, there are similar compilations for sales agencies and other types of wholesale distributors. Sales totals are included along with figures on number of employees, payrolls and merchandise stocks.

Directories are still another source of information about the drug trade in which pharmacy students seem to find real interest. Manufacturers who are substantial advertisers are listed in the periodical editions of a directory known as the Standard Register.

Another publication covering the same field is called McKittrick's Directory. Inasmuch as manufacturers in the drug trade of any importance at all are substantial advertisers, they are all listed in these directories. A copy of such a directory is considered to be a necessary part of the equipment of every advertising agency. Therefore, as Dean McCloskey has kindly suggested, these agencies are willing and glad to turn over to colleges of pharmacy for reference use all but the current issues of these directories.

For wholesale druggists, the National Wholesale Druggists Association issues a directory of its membership. This is usually made available to colleges of pharmacy libraries as a service to them. This Association is composed of full line service wholesalers. The largest retailer owned wholesalers are members of the Federal Wholesale Druggists Association. A list of these members is published by that association. The biennial editions of the Drug Topics List Book have contained a complete and remarkably accurate list of wholesalers.

For retailers the most complete and accurate directory, in my experience, is Hayes' Druggists Directory. This is issued annually. It is useful for finding the names of the drug store owners in any locality. It also is useful in determining whether or not any drug stores are in existence in a community. Another use I have found for it is in determining the branches of a chain drug store company that may be in operation in a particular city.

For chain drug stores, the National Association of Chain Drug Stores has issued a directory of its membership. This is supplied

free on request to college of pharmacy libraries and anyone else who has an interest in the list. The biennial Drug Topics List Book contains, also, a list of chain drug store companies. In addition, it lists the department stores which operate prescription departments and which deal in toilet articles and preparations.

I am confident that any teacher of pharmacy administration who will take the time to bring such facts as these to the attention of his sudents will feel greatly rewarded by the amount of interest that is shown by them in the topic. On such a relatively simple phase of this subject as the variations in average sales per drug store throughout the country a knowledge of available statistics of this kind has been found, in many instances, to have turned what might have been a life long failure as a drug store proprietor into an outstanding success.

Cost and Sales Percentage Analysis Chart*

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Because a knowledge of costs is essential for any business policy, the prospective owner of a drugstore should be prepared to understand costs in whatever guise they may present themselves. This means that he should know these things about costs: (1) the concepts and terminology of costs; (2) the expression of cost in dollars; (3) the expression of cost in percentage; (4) the relationships among the three preceding categories of information about costs.

The task of a teacher seeking to make students understand costs, as well as to create the capacity when they become proprietors for reasonable cost-consciousness, consist of four parts:

(1) The teaching of the principles of economic price determination by the cost of production method.

*A summary of a paper presented before the Conference of Teachers of Pharmaceutical Economics at Buffalo, August 1951.

(2) The showing in detail of the variance in terminology used to identify identical cost concepts by such experts as economists, accountants, and tax authorities; the misuse of terms by careless authors and misleading advertisements; and the adoption of an arbitrary set of terms for the study of costs in class.

(3) The establishing of the distinction and relationship between the two percentage systems used by retailers who buy and sell ready-made products.

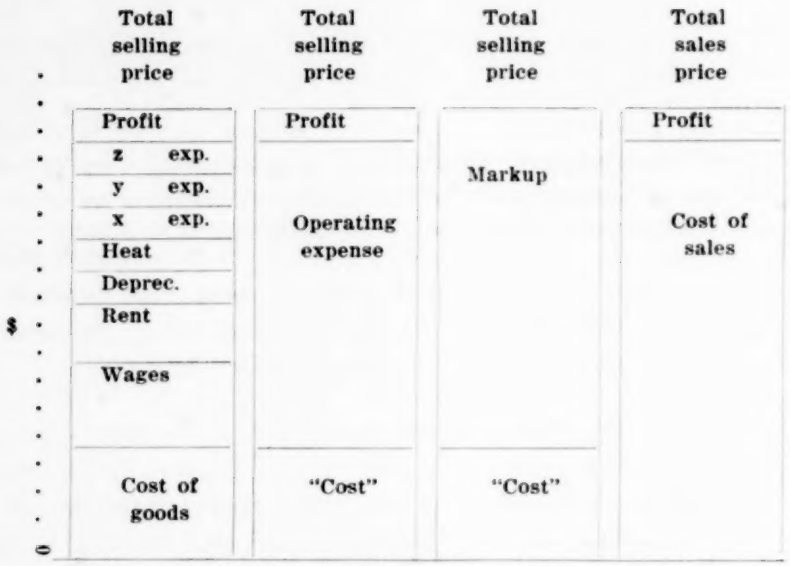
(4) The elimination of as much as possible of the difficulty of mathematical analysis which the use and the interrelationships of the dollar figures and the two percentage systems impose on the analyst.

This paper deals largely with the last of these tasks: the standardization of the analysis. But a few suggestions, which the author has found helpful in teaching, are offered in introduction.

The purpose of this preliminary discussion is two-fold; first to establish a spatial relationship between cost figures entering into selling price or sales price; and second, to establish terminology for the whole and the component parts of "selling price" and "sales". A brief review of the economic principles of price determination by the cost-of-production method accomplishes this nicely. This is done by constructing a bar graph of several bars or columns. Each bar or column is of the same height and represents either the selling price or sale price. The term "selling price" is used so long as the goods are waiting to be sold, and the term "sales" or "sales price" is used after sales are completed. The terms for most of the component parts of both selling price and sales are the same with the notable exception of "markup", used under selling price, which becomes "margin" when used under sales.

The vertical scale of the bar graph, Y axis of the chart, when marked in units representing dollars, will determine the value of the bars or any of their component parts. Bars or columns should be analyzed from the bottom upwards.

The following diagram illustrates the bar graph with the terminology of "selling price" (except in the fourth bar, where "sales" terminology is used):



The first bar or column of the bar graph represents the selling price and is constructed with the bottom block representing the "cost of goods" ("cost of materials" or "cost"). Upon this block are added about fifteen succeeding blocks, each one representing a particular operating expense or cost of doing business (Wages, rent, telephone, delivery, office supplies, etc.). Above these is added a block that represents "profit", and the arithmetic dollar total of all the blocks is placed above the column to represent the "selling price". Although this careful analysis is accurate, so many blocks in the column tend to cause some confusion, and so in the other bars or columns some of these costs (or expenses) are regrouped and given new titles. The following grouping and terms should be illustrated in the second bar or column.

Here the numerous operating-expenses are combined into one block and named "operating expense" or "operating costs" (the first term being preferred). The total selling price of this bar column

consists of three elements: (1) the "cost of goods", (2) the "operating expenses", and (3) the "profit".

The third bar or column has the "operating expenses" block and the "profit" block combined into one and its title is "markup" if used in the selling price (cost-percentage) system, or "margin" if used in the "sales price" (sales-percentage) system. Either term is acceptable when referring to dollars, but the distinction must be made between "markup" and "margin" when referring to percentages.

In bar or column four the "operating expenses" block and the "cost of goods" block are combined and is called "cost of sales", so that the sales price, placed above the column, represents but two elements. The term "cost of sales" is not used in connection with selling price. The use of this fourth bar or column is not discussed in this paper, but it is the basis of an analysis chart used to solve problems involving a figure for cost of sales.

As already pointed out, all columns should be equal in height; and any identical component parts, if found in any bar, must have the same vertical measure.

When the terms of the bar graph are mastered and the spatial relationships are understood, the next step is to clarify the relationship of the two percentage systems. The first percentage system is based upon "cost-of-goods" as 100%, and the second percentage system is based upon "sales" as 100%.

Percentage based on cost-as-100%. The author, for obvious reasons, has named this type of per*cent*age "per*cost*age" (symbol o/c). In retail practice this percostage system has a very limited but exceedingly useful purpose. When goods are acquired the retailer must set a selling price on each item. If competition, fair trade agreements, or other forces do not determine the selling price, the retailer should in theory use the cost-of-production method of setting the selling price. But this method is too cumbersome and, furthermore, the operating expenses as they pertain to each specific item carried are not known, except perhaps as an average total. As a result the retailer uses a series of simple formulas for the lines of goods he carries. The common pattern for these simple formulas can be stated as follows: "Treat the cost of goods as 100% and add (x) % of the cost to the cost to get the selling price". In retail vernacular

this is simplified to "Mark up this item (x) %". Markup is also called "markon".

It must be remembered that "sales" are not always made at the "selling price", and that "mark downs" may be used before a selling price becomes a sale price. It is also essential to observe that if cost is 100%, then the selling price must be over one-hundred per cent.

If the selling price and its components are expressed in a combined spatial and figure form, it would appear as follows: (Total of each column is in the top area.)

Selling price	**o/c**	**Selling price**	**$**
Markup	**o/c**	**Markup**	**$**
(Cost) 100	**o/c**	**Cost**	**$**

Percentage based on sales-as-100%. Again for obvious reasons, the author has named this type of per*cent*age "per*sal*cage" (symbol o/s). When the goods are sold the selling price automatically become a "sales price" or "sale". The amount received is final and definite, and in theory, must now be divided among the factors that made the sale possible. A share must go to cost of goods, another to wages, another to rent, and so on, until all factors are paid. If anything remains, it is profit. These distributions can be expressed in either dollars or percentages (persaleages). If persaleages are used, the 100 o/s value is assigned to the sales figure. In diagram form the spatial and figure relationships can be shown in either of two forms:

Sales	**$**	**(Sales) 100**	**o/s**
Margin	**$**	**Margin**	**o/s**
Cost	**$**	**Cost**	**o/s**

(for more detail the middle areas are sometimes subdivided to show elements thus:)

Sales	**$**		**100**	**o/s**	
Margin	**$**	**Profit $** **Op. Exp. $**	**Margin**	**o/s**	**Profit o/s** **Op. Exp. o/s**
Cost	**$**		**Cost**	**o/s**	

By combining the percostage and the persaleage charts and eliminating one of the duplicate dollar columns, the analysis chart which will be used to analyze and solve many cost and sales percentage problems is created. The analysis chart appears as follows: (Note the 3-column, 3-row basic framework of the analysis chart.)

Selling price	o/c	Selling price or Sales $		(Sales) 100	o/s	
Markup	o/c	Markup or Margin $	Profit $ Op. exp. $	Margin o/s	Profit Op. exp.	o/s o/s
(Cost) 100	o/c	Cost $		Cost	o/s	

If this chart is memorized and the theory behind it understood, no labels will be necessary when the chart is used thereafter for problem solving. Only the tick-tack-toe crosshatch will be drawn and the problem figures inserted in their appropriate areas. The placement of the figures will automatically label them in the mind.

For emphasis, it is well to note the following characteristics of the analysis chart (omitting for the present the profit and operating expense subdivisions):

1. **The chart has three columns and three rows (but remember that for some problems the second and third columns are divided into four rows instead of the usual three rows. Also that the third column may be modified still further if the problem has a cost-of-sales figure.)**

2. **The total of each column is in the top area of the column. This fact enables the analyst to determine by simple arithmetic any last missing figure in the column. Either addition or subtraction will provide the last figure in a 3-row column.**

3. **The first and third columns contain percentages, of different percentage systems, and the center column contains dollar figures.**

4. **All values in a row are equal, no matter what figures appear in the row. This fact is sometimes difficult to grasp as, for instances, when a bottom row contains the figures 100 o/c, $ .80, 43 o/s. Yet it is true that each of these figures has an identical value, and the difference in figures for the value is due to the system under which it is expressed.**

5. **Two of the area figures are always 100. The 100 o/c occupies the lowest left area, and the 100 o/s occupies the top right area of the chart. Therefore the blank chart, before any problem figures are entered has the form:**

6. Because the figures of a row have the same value, and an identical ratio relationship exists between any two figures of a column and the corresponding two figures of any other column in the chart, a direct proportion equation can be determined mechanically to solve for any unknown figure in the chart. This mechanical rule is: To determine what figures in what order are necessary for a proportion equation to solve for X (any unknown or sought figure in the chart) take as the first (or known) ratio and as the second ratio (with its unknown), the figures appearing on opposite sides, and in the same direction, of a parallelogram whose sides are parallel to the crosshatch lines and whose corners have three area figures and X. The author wishes to assure the reader that the manipulation of the rule is not as formidable as it sounds.

To break the rule down, the figures from the parallelogram must be taken in the same direction: right-to-left for both ratios, or left-to-right for both ratios, or bottom-to-top for both ratios, or top-to-bottom for both ratios. Thus in an analysis chart of the form

A	D	G
B	E	H
C	F	I

the following parallelograms are possible: ADEB, AGHB, AGIC, DGHE, DGIF, EHIF, etc. And for the first named parallelogram, ADEB, the following proportions are possible if we assume that the unknown (or X) is an area B : (1) D : E = A : X, (2) A : D = X : E, (3) E : D = X : A . etc. A much simpler proceedure, once the parallelogram is selected, is to cross multiply, which in effect is the second step of the usual method of solving proportion equations, namely, the product of the means is equal to the product of the extremes. Thus instead of setting up the equation D : E = A : X , cross multiply D and X (which you remember is in area B of this problem) and A and E thus: DX = AE, and X = (answer).

To solve problems involving any interrelationship between percostage, persaleage, and dollars by the use of the analysis chart, the following steps are to be taken in order:

1. Construct the blank tick-tack-toe chart and enter the two 100's in the lowest left and top right areas.
2. Enter the given figures of the problem in their appropriate areas on the chart. No symbols need be used for the chart is in effect a "shorthand" that furnishes identity to figures by their location in the chart.
3. Complete any column which lacks only one figure. (By addition if the top area is blank; by subtraction if the middle or the bottom area is blank, and the column has but three rows.)
4. Place the X (the next sought unknown) in its appropriate area. (Some problems need several X's before the final answer is obtained.)
5. Mentally construct a parallelogram the sides of which are parallel to the crosshatch lines of the chart and the four corners of which have either a figure or X. (There must be three figures and one X for a proportion.)
6. Construct the proportion equation with the figures for the known ratio from one side of the parallelogram, and the figures for the ratio with the unknown from the opposite side of the parallelogram and taken in the same direction as that of the first ratio. Or, instead, cross multiply the figures at diagonal corners of the selected parallelogram and solve for X.
7. Solve the equation to determine the value of X.
8. Enter the found value for X in the chart.
9. If further mathematical steps are required to obtain the answer sought, repeat the steps from step number 3 onward.

EXAMPLE:

Problem: *What markup per cent (percostage) will yield a 40 per cent (persaleage) margin?*

Solution: (1) Draw a tick-tack-toe crosshatch.

(2) Put in the two 100's.

(3) Enter the problem figures given. (The only given figure is 40 o/s margin, which is entered in the middle area of the third column.)

(4) Complete the third column by subtraction. This will determine the cost o/s. Answer: 60.

(5) Place X in the middle area of the first column where it will represent markup o/c, the answer sought.

(6) Cross multiply 60 and X for 60X, and 40 and 100 for 4000. $60X = 4000$, $X = 66.666$ or 66.7 (The answer to the problem.)

It is now simple to complete the first column for two figures are known in it. The top area will represent selling price percostage. (This answer was not sought by the problem given.)

To return to step (5), if instead of placing X in the middle area of the first column, we placed the X in the top area of the first column, the solution would have proceeded as follows:

(6) Cross multiply and solve for X. 10,000 = 60X and X equals 166.666 or 166.7. Enter this in the top left area.

(7) Complete the first column by subtraction. Answer in the middle area will again be 66.7 o/c, the answer sought.

Problem: *If a 49 o/c markup in a drugstore department results in a 4 o/s profit for the department, what is the average operating expense o/s for the department?*

Solution: (1) Construct the analysis chart which has the subdivision for operating expenses, and enter in the chart the two 100's.

(2) Enter the problem figures: 49 o/c markup, and 4 o/s profit.

(3) Complete the first column by addition. (Total is placed in the top area of the first column.)

(4) The only parallelogram possible will place the X in the middle area of the third column. This is not the unknown sought by the problem, but its use will lead to it. This X represents margin o/s.

(5) Solve for X and enter the figure in place of X. (X is 32.9 o/s.)

(6) Since this margin of 32.9 o/s is composed of two parts, one of which is 4 o/s profit, the remaining part must be operating expense o/s. (Answer: 28.9 o/s is the operating expense.)

For practice, solve the following problems:

1. At what selling price percostage must an item be sold if a 36 o/s margin is desired? (Answer: 56.3 o/c)

2. If a 31 o/s margin is required to show a desired profit, what price should be paid for an item if it must sell, because of fair trade and competition, at $1.40 each? (Answer: $.97)

3. If an item is marked to sell for 135 o/c, what is the margin o/s? (Answer: 25.9 o/s)

4. If a drugstore manager is promised one-third of the net profits before taxes, how much money will he receive if net sales were $145,000, the operating expenses 28 o/s and the goods had an average markup of 51.5151 o/c? (Answer: $2,900.)

In the following problems, 5 through 10, the precise language of costs used thus far is abandoned and in its place is used the "traditional business language".

In the following problems, 5 through 10, the precise language of costs used thus far is abandoned and in its place is used the "traditional business language".

5. A drugstore with an average operating expense of 28% buys a "deal" advertised as follows: "Your selling price $45., Your cost $30., Your profit $15." What is the true profit percentage if the deal is purchased and sold? (Answer: 5.3 o/s profit)

6. If a prescription sold for $8.50, what was the profit if the average operating expense for the prescription department is 35% and the markup 95%? (Answer: $1.17 profit)

7. Informed by his accountant that operating expenses are 27%, the owner wanting a 6% profit ordered his clerks to mark up goods 33%. What is his loss if the goods are sold at this markup? (Answer: 2.18 o/s loss)

8. A selling price of $2.00 was set on an item after a 70% markup. Average operating expense is 28.5%. If the item would not move at this price, what is the lowest price at which the item may be sold without producing a loss? (Answer: $1.645 is the break-even selling price)

9. If an item marked up 65% did not sell, what is the margin percentage when the goods are marked down 10% and did sell? (Mark down the selling price not the markup.) (Answer: 32.65 o/s)

10. What is the operating expense percentage of a department when the owner reports a profit of $1.45 after a 60% markup, and the item sold for $4.80? (Answer: 18.6 o/s)

11. Differentiate: (a) Selling price vs Sales
(b) Markup vs Margin
(c) Percostage vs Persaleage vs Percentage

The Use of Audio-Visual Aids in Pharmaceutical Teaching*

S. B. JEFFRIES

Professor of Pharmaceutical Business Management
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Before we can discuss audio-visual aids in teaching, we must be clear as to the meaning of the word teach. The dictionary defines teaching as "imparting knowledge to by lessons; instructing in or communicating knowledge". To a number of teachers in the many so-called "subject matter fields" found in the average college of pharmacy curriculum, the term "to teach" means little more than imparting information which has been classified and systematized into textbook units.

*The approach of this paper to the problems of Audio-Visual teaching methods in pharmacy is based largely on the principles laid down by Edgar Dale, professor of educational at Ohio State University and president of the visual instruction department of the National Education Association. His outsanding text, "Audio Visual Methods in Teaching", published by the Dryden Press, New York, is a rich and comprehensive study of this relatively new approach to teaching.

Under this concept settled subject-matter consisting of thousands of related and unrelated facts are communicated to the student by his text books and by his instructors. Some of these facts are valuable and easily transferable by the student to situations outside the class-room, but altogether too many of these facts have importance only in the eyes of the instructor . . . and within the classroom itself. This criticism is not directed at the curriculum as much as it is at the method of teaching.

To the student good teaching involves, among other things, the ability to explain things well, coupled with a sympathetic approach which indicates an awareness on the part of the instructor of student-subject problems and relationships. Prof. Edgar Dale describes teaching as: ". . . a two-direction process, a sharing process, the reaction and interaction of minds blossoming in a mood of mutuality." "Good teaching", he states, "involves the feelings as well as the intellect".

Perhaps most important of all, good teaching involves *using the most effective means of explaining.* The teacher may visualize certain explanations by means of slide films or a motion picture, a graph or a chart. He may demonstrate as a means of explaining the subject being studied. He might use a model or a mock-up, contrive an experience in order to better explain an intricate physical principle. I submit that the films and recording in their many forms are not the beginning and end of A-V aids.

However, merely having good means available for teaching does not assure good use of these means nor, for that matter, does it assure their use at all. It is no secret that pharmacy lags far behind other professions in the use and the development of audio-visual aids. This is particularly evidenced by the paucity of special material available for direct use in teaching pure pharmacy subjects. Nor is there an overabundance of sound audio-visual material available in the less technical areas in the pharmacy curriculum. On the contrary, the pharmacy audio-visual cupboard is relatively bare as compared to medicine.

Without plunging headlong into the curriculum quagmire, I am sure that you will agree with me that curriculum changes and revisions have been slow to develop in pharmacy education; unfortunately, this resistance to change has carried over into pharmacy

teaching methods including teaching methods such as modern A-V aids. Happily enough, this situation has improved considerably since The Pharmaceutical Survey first got under way.

Aside from the fact that a substantial number of so-called conservatives resisted newer methods of teaching old-stuff, the most significant reason for the lag in the development of A-V aids in the pharmaceutical schools can be traced to the reluctance of pharmaceutical manufacturers to give pharmacy education equal recognition with medical education when it came to providing funds for pharmaceutical research projects and for developing and providing audio-visual materials. There are very few major pharmaceutical manufacturers who do not have a host of films, slides, charts, diagrams, etc., produced for use in medical schools. Part of the blame for this one-sided situation, I am compelled to say, lies with us. We have been slow to take up new teaching methods and means in the past, and as a result, made no demands on primary pharmaceutical producers for training help; and they, in turn, have been all too willing to let well enough alone. We have, gentlemen, a great deal to make up for.

To get back to A-V materials in teaching, it is important that we recognize them for what they are. They are not an end in themselves. They are means to an end, that end being MORE EFFECTIVE TEACHING. Properly used, A-V materials can aid the teacher in transmitting understanding, in explaining, and equally important, they can help the student gain rich, concrete, and memorable experiences which are the bed-rock of effective learning.

Is there among us one teacher who has not, at one time or another, despaired at the amount of knowledge, or shall we call it information, that is forgotten by his students shortly after the final examination? Think of the class-time spent teaching subject mater that is soon forgotten, that leaves no impression on the intellect in the form of a usable concept or idea. When the cost of forgotten learning is added up, the waste looms large, large enough to raise the question—Why do we have a tendency to forget what we learn and what can we do to reduce the amount of forgotten learning?

Leading educators who have devoted years of study to this prenomenon agree generally that we forget what we learn for three reasons:

1. **Because at the time we are learning, as it were, we fail to see clearly the importance of the subject to us, either because the subject lacks importance, per se, or we fail to see its relationship to things we already know.**
2. **We do not clearly understand just what it is that we are supposed to be learning or we are not shown how to use or apply this new fragment of information.**
3. **Once having taken in the information, it is rarely called into use in daily living.**

Of course, students and trainees do not forget all that they are taught. But they lose far more than they should. However, if a skill, a concept or an idea is important, if it is taught properly and it has practical application, directly or indirectly, to that student's every day living, it will become a permanent acquisition.

In short, effective learning is accomplished when three conditions are met:

1. **When the motive for learning is present,—the WHY. When the student is made aware of the importance of the subect and when he is shown its significance to him.**
2. **When the student or trainee sees clearly just what it is that he is expected to learn, its purpose and value, he then has some standard for distinguishing between the trivial and the meat. A perusal of any average student's class notes will point up the absence of this skill quite adequately.**
3. **When the student or trainee is shown HOW, what he is learning can be put into practice, or is usable in another sense as contributing to a fund of general experience and knowledge that is essential to understanding and interpretiny other information that they are constantly being exposed to. Without this condition, what they do learn may be nothing more than empty verbalisms, words and ideas that have but superficial meanings.**

To quote from Sidney L. Pressy's *Psychology and the New Education*, ". . . Material will be remembered in proportion as it is meaningful and it is the meaningful element of any given unit of subject matter which is best remembered. Learning, in other words, will last in proportion as it is made significant to the learner".

Prof. Dale, in his text, *Audio-Visual Methods in Teaching*, observes, "that learning, mechanically memorized, stands little chance of being retained, particularly when what the text says is blindly memorized. But, however, when the student thoughtfully learns what the text book passage (or the instructor's lecture) means, he is likely to remember more of it".

Real and effective learning, the temporariness or permanence of learning, can, as we see, be controlled to a marked degree by the teacher-trainer and the role of Audio-Visual materials in making learning more effective is only now beginning to be understood.

As we said before, Audio-Visual materials can make learning more effective by providing the student trainee with an inexhaustible fund of experiences ranging from the direct and purposeful to the indirect-abstract, best exemplified by the verbal symbol. These experiences, varying in kind and degree, more frequently than not result from seeing, hearing, tasting, planning, making, doing and trying. These experiences become usable when they are given names through crystallizations into generalizations, rules, principles, concepts, habits, ideas and the like—in other words, into intelligent, well-grounded abstractions.

For example, the pharmacy student learning elementary bookkeeping through the use of "Practice Problem Units" learns how to enter various transactions in the cash or purchase journal, he works with typical problems and figures, he is acquiring experiences . . . the instructor crystallizes these experiences into accounting concepts, posting, debits and credits; principles and rules are culled from these experiences. As concepts, the principles and rules of bookkeeping become useful experiences in handling and understanding other new and related experiences.

The student, in effect, classifies his experiences into concepts and, as he continues to draw conclusions from experiences and applies these conclusions to new situations, he will be making new generalizations in which the old and the new are combined. He learns, by working with bank statements and loan procedures, that ability to pay back a loan is *one* of the criteria a bank applies to an application for a loan when money is needed for expansion, the condition of the business, the ability to pay back, is reflected by the pharmacy's books. The concept,—profit, applied to this other generalization combined with this new generalization, results in a new experience.

The student combines and recombines these concepts and experiences in new and useful ways. In both situations A-V materials, bookkeeping practice sets and actual bank statements and loan rules and procedures have contributed to the learning process

by affording the student concrete experiences from which generalizations are drawn and concepts built. In effect then, A-V teaching aids permit education and training to be more concrete, which, in turn, helps build better abstractions, concepts and generalizations, thus enabling the student to manage new concrete experiences with increased skill.

We are now ready to consider A-V materials in the light of our comments on teaching and learning. One leading educator describes sensory A-V materials as moving from the direct experience to pure abstraction as we move in the order of decreasing directness. Professor Dale's Visual aid to explaining the interrelationships of the various types of A-V materials as well as their position in the learning process, is the "Cone of Experience". We will deal with a number of these bands or A-V procedures—Verbal Symbols (words), Visual Symbols (charts, diagrams, maps, graphs, etc.), Radio Recordings and Still Pictures, Motion Pictures, Exhibits, Field Trips, Demonstrations, Dramatic Participation, Contrived Experiences, and Direct Experiences.

Note that in Dale's Cone we move from the direct and purposeful experience at the base of the cone to the next less direct state, the contrived exprience which is more direct than dramatic participation, etc. The next five bands involve the student as an observer. The last two bands involve abstract presentation ,i.e., symbolizing, by the istructor. Note, also, that the divisions are not rigid, they are flexible and interrelated and frequently overlap, each band is suited to a particular learning situation and, more frequently than not, several types of sensory materials are combined.

The pharmacy student is expected to acquire direct, purposeful, and practical experiences during his internship or apprenticeship. How many of us have thought of the pharmacy employing the apprentice as an audio-visual teaching material as a science, merchandising and management laboratory offering the *prepared* trainee adventure and exploration on a personal basis?

As in dealing with all A-V aids, we must remember that mere physical contact with objects, materials and situations will not, in itself, offer an educative communication of experience. The student sees things in terms of his own background on the basis of what he has experienced, directly or indirectly. It follows then, that

without proper preparation and guidance, that is, the tieing together of experiences into organic learning, the period of internship might easily fall far short of its basic objectives.

On the other hand, "in pharmacy training", carefully prepared for in advance, and carefully regulated and supervised, can be made to yield rich personal experiences dealing with all phases of the profession. Certainly, the student who is prepared to absorb, understand, measure and classify the vast variety of experiences incidental to an internship, will find interning a most rewarding unit of his professional education.

The tendency towards treating this critical training unit perfunctorily, as a mere legal requirement for licensing, is shared by many educators, as well as leaders in practical pharmacy. No useful purpose would be served by a detailed discussion of the shortcomings of present internship policies and practicies. We are well aware of them. Suffice it to say that, viewed as an audio-visual aid, and as the richest source of experiences on the direct level, the internship unit deserves to be re-evaluated by both the colleges of pharmacy and the state boards of pharmacy. Certainly, there is no denying that both the medical and teaching professions utilize their respective internship units more wisely than we do.

Planned laboratory exercises and experimentation in chemistry, biology, pharmacology, biochemistry, physics, materia medica, etc., contemplates the accumulation of *selected* direct experiences which, when translated into generalizations and concepts, provide the student with the ability to handle the real thing in practice. However, the fact that lab experiments and exercises are *pre-selected and carefully planned, manufactured and edited,* gives them the flavor of contrived experiences. We might call the laboratory learning method the bridge between the real thing and the mock experience, the imitation of the real thing.

Needless to say, present methods of teaching laboratory techniques and procedures may be improved upon considerably by the application and use of audio-visual materials suggested in Dale's Cone of Experience.

Let us examine the contrived experience more closely. What, first of all, is a contrived experience? Quite simply, it is a mock experience manufactured for a special purpose, perhaps one of the

most useful of all audio-visual teaching materials. Its value lies in the fact that it is a purposely edited, rearranged and simplified version of the real thing devised to drive home a particular lesson, free of any of the drawbacks of the direct experience with the real thing.

In teaching any of the sciences mentioned, and particularly in planning appropriate laboratory problems, exercises and demonstrations, it is quite natural to resort to models and mock-ups in order to explain something, that is, employ mock experiences of the reality the instructor is trying to clarify. A solvent recovery still in the factory itself, is too large and complicated for instructional purposes, but a model in manageable dimensions answers the purpose. Atoms and molecules are too small for observation in their natural setting, so the physics professor employs models showing their interaction.

For the student studying pharmaceutical manufacturing, models and mock-ups of various types of equipment are of inestimable value, the model, because it provides a recognizable imitation of the real, but frequently inaccessible thing; the mock-up, because it permits an edited, rearrangement of the essential elements of the original machine spread out so that the student can concentrate on certain selected important points. The variety and usefulness of laboratory working models, exact scale models, cut-away models, and simplified models, merely suggesting the realities they stand for, is limited only by the ingenuity of the instructor.

In teaching pharmacy administration, the so-called model pharmacy, better described as the merchandising and management laboratory, can be extremely useful. Principles and practices of pharmacy layout, modernization and departmentalization can be presented and studied first hand. And by adding selected sound slide film materials along with exact-scale models of store fixtures and equipment which the student can handle, the original contrived experience is likely to become far more instructive than contact with reality would be under the circumstances. In addition, learning window and interior display technique, stock keeping, and inventory control methods, salesmanship and housekeeping, by doing, observing and listening right in the model store, is far more likely to leave a lasting impression than a straight reading assignment and/or lecture.

Certainly, at this point we can appreciate how completely interdependent the various audio-visual materials are in the teaching process and how frequently they have to be combined in order to cope with a particular learning situation. The slide film without sound, interpretive verbal symbols, the mock-up without an accompanying lecture, discussion, film, diagram, etc., are only partially effective sensory impacts half explained, half understood.

Learning through the medium of the dramatic participation the third band in Dale's Cone, is in a sense the fusion of two audio-visual materials, the contrived experience and the dramatized doing. The contrived experience substitutes the mock or manufactured experience for the real thing. It is simplified and purposefully edited, retaining, however, the strongest physical resemblance to the original. Dramatized participation is but a reconstruction of, or substitution for the original.

Perhaps the best example of the application of this audio-visual technique is the play, used to depict a slice of life or a character study. A recent Philco T-V play about a small town pharmacist provided a character study which served to point up the honesty, professionalism, integrity and community mindedness of the druggist. It provided a lesson in professional ethics and good public relations that a million written words could not match. Had the players been students, it would have illustrated the principle of learning through dramatic participation. As it is, the student is a vicarious actor, he observes . . . just as he would a demonstration, with the expectation of doing or repeating what he saw and learned at a later time.

Perhaps, the best used illustration of the dramatic participation type of audio-visual techniques is the sales training skit, a playlet, wherein a sales situation is contrived in the model pharmacy and acted out by student-trainees. At Brooklyn College of Pharmacy, each pharmaceutical business administration student participates in such a training drama but it is embellished by the use of another audio-visual device, a tape recorder which records the entire transaction for the purpose of providing a play-back. This play-back encourages general classroom discussion, self-criticism, and self-correction.

A large variety of motion picture and slide films are used by modern industry to dramatize such ideas and concepts as factory safety practices. The Proprietary Association dramatized and ro-

manticized the development of the patent medicine business. Traffic safety films are widely used in high schools and grade schools to illustrate the dangers of jay-walking and hot-rod driving.

Historical and social studies on film in the dramatic form are common. The story of Louis Pasteur or The Rehabilitation of the Spastic in motion pictures illustrate the dramatization of important scientific events. If the dramatization is accurate the student has gained a great deal by the added Time-Place perspective permitted by this medium. Of course, it is in the business management and sales-training area where this type of dramatic presentation excells as a teaching aid. It is also interesting to note in passing that Civil Defense authorities faced with the problems of Special and Mass Indoctrination find this audio-visual form to be tremendously effective in teaching the civil-defense postulates.

The *demonstration* is perhaps the most commonly used audio-visual teaching techniques in a college of pharmacy. It involves telling, showing, and doing by the demonstrator—live or mechanical. It is a means whereby the student is shown how something should be done or not done; how something works and why. Teaching the sciences would be difficult if not impossible without this teaching device. In the physics laboratory the student observes his experience is less direct. He sees how the inclined plane works, the effect of friction, and atmospheric pressure. In the chemistry laboratory the student observes a demonstration of ionization. In the pharmacy dispensing laboratory, the student watches the instructor demonstrate pill-rolling, capsule-filling, titration, mixing powders, manufacturing suppositories, using the mortar and pestle properly. Here the student will more than likely be asked to do what he has seen done. Obviously whether doing will follow the demonstration will depend on the teaching problem involved.

The demonstration technique is so commonly used that it hardly needs greater definition or analysis. However, this much must be made clear. There is tremendous room for improvement in the use of this teaching aid. To take one instance of how the instructor can improve his demonstration technique, ask yourself as a practical matter in class room procedure, how many times you have found that students at the rim of the crowd gathered around the demonstration table have missed more than half the salient points you hoped to

put across. Would not a film strip or a motion picture large enough to be seen by everyone, in which an expert shows how to fill a collapsible tube or compound a suppository prescription, have been tremendously helpful?

There really is no difference in the theory of the demonstration between the film strip or motion picture and the class room demonstration. It is all a matter of recognizing that a demonstration is frequently more than just a demonstrator and an audience. The well-planned demonstration invariably involves the use of *one* or *more* of a variety of other audio-visual materials and techniques,—a blackboard, charts, models, diagrams, film strips, lantern slides, a tape-recording, or a motion picture, each contributing its share towards making the demonstration more effective. Our trouble in pharmacy-teaching, as we pointed out before, is the dearth of good audio-visual materials.

The student observing a play in which an idea or concept has been brought to life, or the demonstration of a complicated compounding operation, he learns vicariously,—he learns by seeing and hearing what others are doing. As a matter of fact, a substantial part of his learning will of necessity be vicarious, since he cannot conceivably do everything himself, either in the undergraduate school or in later life.

The field trip is an extension of this idea of vicarious experiencing. As an audio-visual technique, it is so well known that detailed comment would be superfluous. Fundamentally, it is a well-planned excursion into the every-day world, the objective of which is to tie together class room theory with life's realities—social, professional, or industrial, as the case may be. The student sees things in actual operation. Words, pictures, models, diagrams and definitions used in class acquire new and richer meanings.

The class room description of how the enteric coating on a tablet is applied, the description of the machine by words and illustrations, becomes more meaningful when the actual operation is seen in a pharmaceutical plant. A discussion of the pharmacology of curare becomes excitingly alive as a result of having watched the laboratory technician working his "control" problems on laboratory animals. The sweep and scope of pharmaceutical research, as part of the overall program of pharmaceutical product development as-

sumes new meaning when the student is introduced to 60 acres of factory and laboratory facilities. He sees how each element is co-ordinated through a central planning committee, how each contributes towards accomplishing a common objective.

Needless to say, the field trip can be an exciting and valuable teaching aid; but how much the student will get out of it will depend on the amount of attention that is given to planning the trip in terms of teacher and student preparation before, and follow-through in the class room after the trip. If student interest is aroused by pre-trip discussions of problems that the trip can help to solve, if the pur-- pose of the trip is made clear, if background material for understanding the things he will see is provided through the use of other audio-visual aids, the student will know what to look for and be better prepared to ask int ligent, searching questions.

Motion pictures, 8 mm, 16mm, 35 mm, color, sound, three dimensional, and still pictures, particularly Koda slides and slide films, are perhaps the most exciting, versatile, and flexible audio-visual teaching-aids yet developed. Any doubts as to their effectiveness have been dispelled by the tremendous success achieved in their use by the military and by industry during World War II as training devices.

Broadly speaking, the motion picture and still film provide a means of second-hand observation of life. Through these aids any aspect of life, a small segment or a large slice, can with an economy of time, and a minimum of effort, be brought right into the class room for instructional purposes along with other audio-visual procedures as described previously.

Because the motion picture or still film lends itself to compressing pre-selected experiences in an order most likely to accomplish its teaching purpose, it presents advantages similar to those the contrived experience has over the direct purposeful experience. For example, in a Brooklyn College of Pharmacy motion picture showing the correct procedure for filling a collapsible tube, the finished job is shown at the start of the picture; then the important step-by-step operations leading to the finished tube are shown. Selected points are covered in a deliberately chosen order, a skill is promoted and developed.

Pharmacy education has need for many similar instructional films on a wide variety of subjects ranging from the pure sciences to the commercial effects of pharmacy. A partial list of much-needed instructional films might include films on: pharmaceutical wetting, masking, flavouring, emulsifying, ointment preparation, blood testing, and urinalysis.

With the growing interest in pharmacology—particularly in terms of products, clinical activities, use of drugs in various specific diseases, toxicity and dosages, the need for audio-visual materials to supplement lectures, demonstrations, and laboratory exercises is keener than ever. Such films, individually, might deal with drugs such as: analgesics, anti-infectives, cardio-vascular agents, hematinics, hormones, anti-rheumatics, etc.

A series of films, motion or still, covering Specialties in Prescription Filling would be tremendously helpful, not only to the student—who rarely think in terms of Prescription Specializations or Classifications, but also to practicing pharmacists who face the everyday problem of charting their professional course. The series might include films on such subjects as (1) Cardio-Vascular, (2) Gynecological, (3) Dental, (4) Nutritional, (5) Anti-biotic, (6) Amino acid, (7) Dematological, (8) Pediatric, and (9) Geriatric Medication and Prescriptions.

Instructional films on the commercial aspects of pharmacy might include for example: Prescription pricing and costing methods; Professional promotion-detailing; Salesmanship; Merchandising the various departments—baby goods, veterinary supplies, cosmetics, proprietaries, rubber sundries, etc.

There are a few of medical-teaching motion pictures and slides which lend themselves to use in colleges of pharmacy; most of them do not. In any event, a survey of scientific film sources by the audio-visual committee of AACP might prove very valuable. Perhaps United World Films, Inc., a subsidiary of Universal-International, might aid in this study through its Pharmaceutical Visual-Aid Service Department.

At the Brooklyn College of Pharmacy we have, as a practical matter of policy, devoted a great deal of time and energy to studying, developing, and applying the visual-training procedures discussed. We have produced 3 instructional films dealing with theoretical and

practical pharmacy under the able guidance of Profs. Fonda and Greenberg. They are presently on exhibition in the audio-visual section. We are continuing to cooperate with the College of the City of New York in the production of the American Drug Store Business Training Series . . . slide films dealing with the commercial aspects of pharmacy. We have acquired and use in all the audio-visual procedures mentioned, such major pieces of audio-visual equipment as: the 16 mm sound projector, the combination opaque and slide projector; standard slide projector, 35 mm automatic sound equipment as: the 16 mm sound projector, the combination sound slide projector and tape recorder. There is nothing we have accomplished that cannot be done or perhaps even improved upon by any other college of pharmacy.

May I in closing recommend that serious attention be given to the improvement of audio-visual procedures in teaching pharmacy. The Audio-Visual Committee of the AACP is, I am sure, prepared to assist member colleges of pharmacy in establishing audio-visual programs suited to their needs, supply information and ratings on films and other audio-visual materials already available, act as a clearing house for audio-visual projects being worked on in the colleges in order to prevent duplication, and assist in the discrimination and exchange of the work already completed by the various colleges.

The Alpha Delta Chapter of the Rho Chi Honor Society of Loyola College of Pharmacy of New Orleans presented Miss Elinor Mae McCloskey, the daughter of Dean and Mrs. John F. McCloskey, the Rho Chi Award as the outstanding freshman of the year 1951. Miss McCloskey, one of eight girls in a class of thirty-seven boys, was outstanding in every phase of her freshman year. Scholastically she was a cum laude student, elected a member of the University Student Council, secretary-treasurer of the Pep Squad, member of the A.Ph.A. branch, treasurer of the freshman class, and treasurer of Kappa Epsilon. The Society voted her as outstanding in leadership, character and service rendered to the university.

ERRATUM

In Table of Contents, Vol. XVI, No. 1, under Memorials, change Joseph S. Goldberg to read Joseph S. Goldwag.

Interim Report of Sub-Committee on Office of Permanent Secretary*

Last year, a committee under the chairmanship of Dean Arthur H. Uhl presented a report on the functions and purposes of the American Association of Colleges of Pharmacy[1] and a preliminary report of the committee on office of permanent secretary[2]. Dean Uhl has re-emphasized the major points of the first report at this meeting. It was the function of this sub-committee to study these recommendations and the financial problems involved in establishing, staffing and maintaining a full time secretarial and editorial office for the American Association of Colleges of Pharmacy.

The appended budget is based (1) upon the present budget of the Association and (2) on figures for comparable offices which were made available to the chairman of this committee by Mr. P. H. Costello, Secretary of the National Association of Boards of Pharmacy, Mr. Robert H. Nagel, Secretary-Treasurer and Editor of Tau Beta Pi, Engineering Honor Society and Mr. Alton B. Zerby, Executive Secretary of Eta Kappa Nu, Electrical Engineering Honor Society. In addition, there is a certain amount of opinion, unsupported by figures, but representing the optimistic judgment of the committee. A few comments in explanation of some of the items may be helpful.

1. **Executive Secretary and Editor**—The Association has small need for a person in this office who is skilled in lobbying in legislatures or in the Congress but a great need for one who can devote his time to (1) leading and coordinating the work of the many committees of the Association; (2) planning the details for executing the policies set by the Association and its Executive Committee; (3) representing the Association at joint meetings with other pharmaceutical and educational associations with dignity, wisdom, and some authority; (4) creative editorship of the American Journal of Pharmaceutical Education.

*This report of the Sub-Committee was presented to the Executive Committee at the November 1951 meeting of the Committee in Chicago.
1 Amer. Jour. Pharm. Ed. **14** 648-50 (1950)
2 ibid. **14**, 651-654 (1950)

It is suggested that the permanent secretary should be a man whom any university or college of pharmacy would be proud to have as a professor or dean. That is to say, he should have academic qualifications equal to such a position and have had a few years of teaching experience. The latter need not have been long, but sufficient to make the person conscious of some of the problems of teaching and administration. In addition, he should have a genuine liking for administration and editorial work.

The salary for the executive secretary and editor should be large enough to attract an able and enthusiastic man but not so large as to create a feeling of jealousy among other administrators in the Association. There should be provided in addition to the salary, an expense budget adequate to the requirements of the office.

2. **Editorial Assistant**—The editorial assistant should be a person who is capable of managing the routine duties of the office in the absence of the executive secretary as well as some of the mechanical details of preparing copy for publication. Such a person would deserve better compensation than would be necessary for a routine typist.

3. **Committee Activities**—The Executive Committee should be free to meet at least twice each year to check up on the Secretary-Editor and to determine policy. Since there should be no limitation on the geographical distribution of its membership, provision should be made for the expense of bringing the members together. During some years this expense may be lighter than others, but in setting up this budget, we should anticipate a maximum expenditure.

The Curriculum Committee has, presently, been located in a rather restricted area so that expenses of an assembled meeting have been low. We cannot count on a continuation of that situation so expenses may increase. The importance of this committee is so great that adequate provision should be made for it.

The Committee on Predictive and Achievement Tests should have funds for the compilation and printing of experimental tests and for the employment of expert advice in this area. Nothing much has come from this committee in the past, largely through lack of finances. This should be corrected.

Audio-Visual Education needs active studies, which cannot be done without funds. Perhaps this item is much too small, but it is a start.

Inter-professional relations should be another active area. We envision the need for the production of material which could be presented to the Association as ideas for the promotion of this field. The budget is probably too small for a continuing program. It is only a guess.

The support for the programs of the eight district meetings has been too meager in the past. We have indicated that it should be doubled. This may not be enough but any further guess would have to be substantiated by a more exact study.

G. L. WEBSTER, *Chairman*

THE ESTIMATED BUDGET

SALARIES

Executive Secretary and Editor	**$12,000.00**
Assistant to Secretary and Editor	**4,000.00**
Contribution to Social Security (2%)	**320.00**
Contribution to Retirement Annuity (5% x 12,000.00)	**600.00**
Total Salary budget	**$16,920.00**

EXPENSES

Printing and distribution of Journal (4 issues, 750 pages)	**10,000.00**
Executive Committee meetings (2 each year)	**3,500.00**

Committee Expenses

Curriculum	**$1,000.00**
Predictive & Achievement	**1,500.00**

Audio-Visual Education	500.00	
Inter-Profess. Relations	100.00	
Other committees (postage, Mimeographing, etc.)	200.00	3,300.00
Seminar on Teaching Problems		6,000.00
Expenses of annual meeting		500.00
Expenses of 8 District meetings		400.00
Dues to other organizations		780.00
American Council on Pharmaceutical Education	$ 600.00	
American Council on Education	100.00	
A.A.A.S.	50.00	
National Drug Trade Conference	25.00	
Medical Library Association	5.00	
Expenses, Secretary's Office		
Rent (500 square feet)	$2,000.00	
Travel	2,500.00	
Postage, Telegrams, Telephone	600.00	
Printing (stationary, reprints)	250.00	
Binding (journals)	100.00	
Consumable office supplies	400.00	
Insurance, Bond, Audit	160.00	
Replacement & Repairs (furniture & machines)	300.00	6,310.00
TOTAL ANNUAL ESTAMATED EXPENDITURE		$47,710.00
Estimate of initial cost of office furniture & machines		2,500.00
First year		$50,210.00

INCOME

Dues from 64 members at 200.00 each	$12,800.00
Income from Journal subscriptions	1,200.00
Other income	150.00
Total estimated income	$14,150.00

Interim Report of Committee on Constitution and By-Laws as of March 29, 1952

To Member Colleges of the American Association of Colleges of Pharmacy:

Submitted herewith is an interim report of the Committee on Constitution and By-Laws which contains three proposals for amending the Constitution and By-Laws of the Association. These proposals all have been properly submitted in compliance with the provisions of the Articles governing amendments and will be subject to a final vote at the 1952 meeting of the Association.

Proposal A—To establish Associate Membership in the Association for non-accredited schools of pharmacy.

This proposal was made by President Schaefer in the Report of the President at the 1951 meeting (see Am. J. Pharm. Ed. *15*, 490, October, 1951) and was submitted in the form of Resolution No. *2* (*l.c.*, p. 580) which was referred on vote to the Executive Committee. At the interim meeting of that body, on November 19 and 20, 1951, the Chairman of the Executive Committee was instructed to work with the Committee on Constitution and By-Laws to implement this resolution. To do this it is necessary to make changes in several current Articles in both the Constitution and By-Laws and the following are recommended by your Committee (where mere changing or insertion of words is necessary the changes to be made are in bold face type):

Constitution

Article III. Membership

Paragraphs 1 and 2 of current Article—no change

Paragraphs 3, 4 and 5—insert new paragraphs to read as follows:

"Membership in the Association shall consist of two types, Active members and Associate members."

"Active members shall meet in full all of the qualifications for membership as stated in Article I of the By-Laws."

"Associate members shall meet all of the qualifications for membership as stated in Article I of the By-Laws except the requirements of Sections 1 and 2 concerning minimum length of operation and accredita-

tion. Associate membership shall be limited to a term of not more than five years. Associate members, or their delegates, shall have all the privileges and responsibilities of Active members, including the payment of dues, except the right to vote in the transactions and to hold elective office in the Association."

Paragraph 3 of the current Article—to become paragraph 6 with no change in wording.

Article V. Voting Body—change to read as follows:

"Each Active member-college shall be entitled to one voting delegate and to one vote in the transactions of the Association. All of the properly accredited delegates of any member-college, Active or Associate, shall have the right to engage in debate upon any question."

Article XI. Amendments—change the last sentence of paragraph 1 to read as follows:

"Such alteration or amendment shall, upon receiving at a regular annual meeting a two-thirds vote of the total Active membership, become a part of the Constitution."

By-Laws

Article I. Qualifications for Admission to, and Membership in the American Association of Colleges of Pharmacy.

1. Minimum Length of Period of Operation—no change

Insert a new Section 2 to read as follows:

"2. Accreditation.

The college shall be accredited as a Class A, B or C College by by the American Council on Pharmaceutical Education."

Section 2 through 12 of the current Article to be renumbered as Sections 3 through 13 with no change in wording (except for the current Section 6 which is the subject of Proposal C, discussed below).

Article IV. Discipline of Member-Colleges.—in lines 16, 18 and 19 change the words, total membership, to read as follows:

"total Active membership"

Article XII. Representation at Meetings.—change the first sentence to read as follows:

"One voting delegate and an alternate shall be elected by the faculty of each Active member-college and their credentials, together with those of all non-voting delegates of both Active and Associate member-colleges, shall be sent to the Chairman of the Executive Committee not later than ten days before the date of the announced meeting."

Proposal B—To provide for succession of the President-Elect, for election of the Editor of the American Journal of Pharmaceutical Education, and for the succession of officers in the event of death.

This proposal emanated from the interim meeting of the Executive Committee on November 19 and 20, 1951 (see Item 25 of the Minutes of that meeting), when a study disclosed that the current Constitution makes no provision for the President-Elect officially to become President and when discussion brought out the desirability of having the Editor elected by the Executive Committee. To carry out these recommendations it is necessary to make changes in Article VII of the current Constitution and the following are recommended by your Committee:

Article VII. Officers.—in line 3 of paragraph 1 change the words, an Executive Committee, to read as follows:

"The Executive Committee."

Paragraph 2 of the current Article—no change.

Paragraphs 3, 4 and 5—insert new paragraphs to read as follows:

"The President-Elect shall succeed automatically to the office of President upon the election of his successor as President-Elect and shall be installed, along with the newly elected officers, at the final session of each annual meeting."

"The Editor of the American Journal of Pharmaceutical Education shall be elected by the Executive Committee and shall hold his office for one year or until his successor is elected and installed."

"In the event of the death or other inability of any of the officers the interim succession of the officers shall be directed by the Executive Committee."

Proposal C—To delete paragraph b. of the current Article I, Section 6 of the By-Laws, to provide for an optional five-year course, and to recognize the degree of Bachelor of Pharmacy for completion of an optional five-year course.

Although three proposals are included here they are grouped together since they all affect the same section of the By-Laws. The proposal to delete paragraph b of Article I, Section 6 was made by President-Elect Reese in his Installation Address at the 1951 meeting (see Am. J. Pharm, Ed. *15*, 494, October, 1951) and was submitted in the form of Resolution No. 6, *l.c.*, p. 581) which was

passed by the Association. The proposal for the degree of Bachelor of Pharmacy was made in the same address (*l.c.*, p. 498) and was submitted in the form of Resolution No. 5 (*l.c.*, p. 581) which was referred on vote to the Executive Committee. At the interim meeting of that body, on November 19 and 20, 1951, the proposal was discussed at some length (see Item 12 of the Minutes of that meeting) and it was also the decision of that body to recommend to the Association the adoption of an amendment to provide for the offering of a five-year course on an optional basis.

Considerable discussion has ensued between the Committee on Constitution and By-Laws and the Chairman of the Executive Committee in order that the point of view and the intent of the Executive Committee in these proposals would be thoroughly understood and expressed in the wording of any changes to be presented to the Association for vote. To implement the recommendations of the Executive Committee for recognition of the five-year course on an optional basis and for recognition of the Bachelor of Pharmacy degree for its completion, but at the same time to provide flexibility and free choice as to which degree may be awarded the following changes are recommended by your committee:

6. Curriculum and Degrees

Paragraph a.—no change

Paragraph b.—current paragraph to be deleted and paragraph c. to be relettered as paragraph b.

Paragraph c.—a new paragraph to be inserted to read as follows:

"c. A college may, on an optional basis, offer a course of instruction consisting of not less than five full college years of at least 32 weeks each, scheduled over a minimum of five days per week."

Paragraph d.—a new paragraph to be inserted to read as follows:

"d. For completion of the five-year course the degree of Bachelor of Pharmacy (B. Phar.) may be given instead of the Bachelor of Science (B.S.) or Bachelor of Science in Pharmacy (B.S. in Phar.) or it may be given in addition to either. No other degrees may be given."

LLOYD M. PARKS, *Chairman*

Minutes of the Meetings of the Executive Committee Held at the Palmer House, Chicago

November 19 and 20, 1951

1. Meeting called to order by Chairman Burt at 10 A.M. Present—President J. Allen Reese, President-Elect, Troy C. Daniels, Editor R. A. Lyman, Dean Hugo H. Schaefer, Dean Linwood F. Tice, Dean Francis J. O'Brien, Dean Harold G. Hewitt, Professor George L. Webster and Secretary-Treasurer, Louis C. Zopf.
2. Secretary Zopf read and discussed communications received by his office since the August meeting.
3. Dean Tice discussed the advisability of sending a commissioner or advisor on pharmaceutical education to Japan. The Executive Committee concurred in the opinion that since the signing of the peace treaty it would perhaps be desirable to await further initiation on the part of the Japanese before encouraging the army to undertake such a project.
4. Chairman Burt read a progress report from Chairman John F. McCloskey of the Sub-Committee on a proposed A.A.C.P. minimum salary scale for faculty members. The report was discussed and the Secretary instructed to recommend to the committee that they make the questionnaire as simple as possible; that they confine their investigation to the various ranks in the professional area and that they obtain information for the current academic year.
5. Dean Burt reported as Chairman of the Publications Committee. He presented two sets of figures as advertising rates for the Journal effective January 1, 1952. The Executive Committee approved the following advertising rates:

	Full Page	Half Page	Quarter Page
Single Insertion	60.00	35.00	20.00
Annual (4 issues)	215.00	125.00	75.00

Carried

6. Dean Tice reported as Chairman of the Committee on Brochure on Pharmacy, and presented a time and cost schedule. He stated that Dr. Robert P. Fischelis, Secretary of the A.Ph.A. was very much interested in the possibility of correlating the activities of the A.Ph.A. and the A.A.C.P. toward the development of a co-sponsored brochure. Dean Tice's committee was authorized to make further investigation toward this possibility.
7. President Reese was requested to appoint a committee to implement the Resolution approved by the Association at the Buffalo meeting, authorizing the appointment of a committee designated to study the means and methods by which the colleges of pharmacy may develop and implement a program of education and indoctrination in Civilian Defense. President Reese named the following committee: Professor S. B. Jeffries, Dean Noel E. Foss, Dr. Robert P. Fischelis, Dean Linwood F. Tice, Chairman.
8. The Executive Committee discussed at some length the recommendation referred to it, from President Schaefer's report to provide for associate membership in the A.A.C.P. for non-accredited schools of pharmacy. Such membership to be limited to a term of not more than five years.

   Tice-O'Blien moved that we approve as a requirement for active membership a class A, B, or C accreditation by the American Council on Pharmaceutical Education; that provision be made for associate membership for both schools having a Y classification and those which are non-accredited; and that such associate membership be limited to five years. The motion was approved and the Executive Committee instructed Chairman Burt to work with the Committee on Constitution and By-Laws to implement the establishment of associate membership in this Association.

   Dean Daniels was requested to discuss with the American Council on Pharmaceutical Education the desirability of establishing membership in this Association as a requisite for continued accreditation by the Council.
9. The Executive Committee approved the referral of the request from District Number 4 directed to Selective Service, to take into consideration the number of replacements needed annually

in the practice of the profession, to the Acting Chairman of the Commission on Professional Manpower for Pharmacy. Carried.

10. The following resolution approved by the Association, was discussed:
BE IT RESOLVED, that Article I, Section 6 of the By-Laws of the American Association of Colleges of Pharmacy be amended by the repeal and deletion of paragraph b, and change in the designation of paragraph c to b.
Chairman Burt was instructed to refer this resolution to the Committee on Constitution and By-Laws for action.

11. The Executive Committee discussed the resolution, approved by the Association, which recommended the discontinuation of the Committee on Professional Relations and concurred in the action of the Association.

12. The resolution from President Reese's address:
I recommend that a statement be introduced in our By-Laws under Section 6 of Article I, permitting the awarding of a Bachelor of Pharmacy degree for the completion of a five-year course in pharmacy,' was discussed at some length. Chairman Burt proposed amendments to Article I of the By-Laws, which would effectuate the repeal of Section 6b as directed by the Association and in the designation of 6c as 6b and the implementation of the recommendation of President Reese by recommending to the Association the adoption of an amendment to be known as Section 6c of Article I, reading as follows:
A college may, on an optional basis, offer a course of instruction consisting of not less than five full college years of at least 32 weeks, scheduled over a minimum of five days per week.
Chairman Burt's original proposal concerning the wording of a proposed Section d was revised to read:
The degree of Bachelor of Science (B.S.), Bachelor of Science in Pharmacy (B.S. in Phar.) and Bachelor of Pharmacy (B.Phar.), and these degrees only may be given for the completion of the five-year course.
On motion by Reese-Tice, the above actions were approved.

13. The Executive Committee discussed the Teachers Seminar program and reviewed the offer of cooperation of the Plant Science Seminar in arranging for a Teachers Seminar in Pharmacognosy

in 1953. The Committee approved a motion that the 1953 seminar be devoted to pharmacognosy and related subjects and that pharmacy be selected as the subject matter for the 1954 seminar.

14. The Executive Committee approved the appointment of a committee of five, to be named by President Reese, for the purpose of cooperating with the American Pharmaceutical Association in the development of its centennial celebration, and that this committee provide for a paper on the contributions of the A.Ph.A. to American pharmaceutical education.

15. Schaefer-O'Brien moved that because of the A.Ph.A. centennial celebration and in keeping with the program to be planned by the other affiliated organizations, that our Association meeting be scheduled for the latter part of the national convention week and that the officers of the Association be given final authority to determine specific dates and details of arrangement of the program. It was understood that this action did not constitute an endorsement for design of future meetings. Carried.

16. The Executive Committee agreed to accept the period of operation of the School of Pharmacy of the College of the Ozarks as a fulfillment of the requirements of Article I of the By-Laws as a requisite for admission to the A.A.C.P. for the College of Pharmacy of the University of Arkansas.

17. Chairman Burt outlined the special case of a student at Rutgers University, College of Pharmacy as presented to him by Dean Bowers. Schaefer-Hewitt moved that we accept Dean Bowers interpretation, that this student has satisfied the equivalent of six semesters of work, and that the Executive Committee directs Dean Bowers attention to the apparent negligence in the matter of records. Carried.

18. The Executive Committee reviewed invitations from five member colleges and by secret ballot the University of Michigan was named as the host school for the 1952 Teachers Seminar On Pharmaceutical Chemistry. The Executive Committee again approved the appointment of a seminar committee of six, the President, the Chairman of the Executive Committee, the Secretary-Treasurer, the Dean of the host school and two other

members preferably to be selected from the staff of the host school.

19. The resolutions from the National Association of Boards of Pharmacy were read and discussed and on motion of Schaefer-Reese received.

20. Dean Schaefer reported that he had attended a joint meeting of all Professional Boards, Councils and Grievance Committees of the State Education Department of the University of the State of New York, over which Assistant Commissioner Killough presided. The matter of registration by New York State of out-of-state professional schools came up for discussion. A resolution was unanimously passed recommending that the Education Department accept in whole or in part the evaluations and recommendations of national accrediting agencies maintaining standards similar to those existing within New York State. Further action on the part of the Education Department of the State of New York in response to this resolution is now being awaited.

21. President Reese reported that he had appointed Dean Tice to serve as a member of the committee of five to have charge of the program of the pharmacy section of the American Association for the Advancement of Science.

22. The travel expense necessary to provide representation by either the President, Chairman of the Executive Committee, or the Secretary-Treasurer at each of the eight district meetings to be held during 1952 was approved by the Executive Committee.

23. Secretary Zopf was instructed to communicate with Dr. Fischelis and to learn who among the official delegates could be appointed to represent this Association as its official delegate to the 2nd Pan-American Congress at Lima, Peru, December 1-8, 1951.

24. President Reese reported that he had requested President Kleinschmidt of the University of Southern California to represent this Association at the inauguration of Richard Anderson Harvill as President of the University of Arizona.

Meeting adjourned 6:05

Meeting called to order Tuesday, 9:05 A.M.

25. The Executive Committee instructed the chairman to transmit the following recommendations to the committee on Constitution and By-Laws.
    1) That provision be made for the formal succession of the President-Elect to the office of the President.
    2) That the Executive Committee recommend that the election of the Editor of the Journal should be made by the Executive Committee.
    3) That in the event of the death of any of the officers, the succession of the officers be directed by the Executive Committee.
26. Chairman Burt distributed a preliminary summary of the report on enrollment in schools and colleges of pharmacy in the continental United States during the first semester, term or quarter of 1951-52, showing a total of undergraduate enrollment of 17,699 and a graduate enrollment of 514.
27. The Executive Committee reconsidered Resolution No. 4 adopted at Atlantic City and amended at Buffalo with respect to persons having a background in pharmaceutical education in foreign countries (except Canada). President-Elect Daniels suggested that the exception should include students from England, Scotland, Wales and Northern Ireland. Following considerable discussion Chairman Burt appointed Dean Tice to investigate the proprietary of broadening the exception as outlined in Resolution No. 4 to include the English speaking countries.
28. Because of Cyril Tukeman's (a student from England currently enrolled in the College of Pharmacy of the University of California) exceptional background, the Executive Committee voted to approve one year of resident as sufficient to qualify him for a degree in pharmacy.
29. Dr. Webster reviewed the financial portion of the committee report for the establishment of a permanent secretary and office. The Executive Committee discussed the possible sources of funds to implement the recommendations. Chairman Burt appointed the following committee to explore possible sources for funds for this purpose:
    President J. Allen Reese, Chairman George L. Webster
    Secretary Louis C. Zopf

30. President-Elect Daniels outlined the University of California proposed new five and six year curricula.
31. The following topics were recommended as possible discussion subjects for the district meetings:
    1) Films as teaching aids
    2) Controlled experience as a requirement for graduation
    3) Impacts of The Durham-Humphrey Bill
    4) Requirements for admission of students with foreign training.
    5) Problems in pharmaceutical education.

Adjourned 12:15 P.M.

LOUIS C. ZOPF, *Secretary*

A research and training center—"The Institute of Cellular Growth"—has recently been organized at the University of Nebraska. For Furthering its work, the Cooper Foundation has donated a gift of $20,000 which will be used for remodeling and equiping new quarters—laboratories, sterile rooms, and office space—in the Plant Industry building on the Agricultural Campus.

The investigation to be carried on at this center will be a continuation of those that have been in progress for many years under the direction of D. M. Pace. These include studies on the factors involved in growth of living cells. Comparative studies will be made on both normal cells and sarcoma (cancer) cells. The cells that are used for this work are obtained by isolating one of each type; these are grown in nutrient solutions and finally a stock is obtained which is stable and with which many quantitative studies may be made.

Only one other laboratory is at present using these methods of study. This is the National Cancer Institute at Bethesda, Maryland where some of the techniques were developed.

It is hoped that more and more students may be trained in this area so that work in this field may progress more rapidly.

The President's Page

This is the last opportunity I shall have to speak through the Journal to the members of the Association before the Convention. Because 1952 is the Centennial year of the American Pharmaceutical Association, all affiliated organizations have been requested to defer the opening of their sessions until after the convention of that organization. The College meetings will be scheduled Thursday and Friday of the week. It will be necessary to streamline the meetings and the chairman of the various committees should prepare an abstract of their reports for presentation and have the complete report mimeographed for distribution to the membership. Even though it is unsatisfactory to the American Association of Colleges of Pharmacy to have their meeting following the A.Ph.A. convention, I believe it only fair to make this concession this year for the Centennial. However, we should be on guard that this pattern does not become a precedent to be followed in scheduling future annual meetings of our association.

One of the greatest strides made by the Association was the establishment of the summer teaching seminars for the various fields of Pharmacy. Plans have been made for the one this summer at the University of Michigan at Ann Arbor and this should be the best attended one so far. Every Pharmacy school or college should be represented by one or more members. Every phase of pharmaceutical chemistry will be included and the subjects will be presented by leaders in all the branches. It is particularly important that the less experienced teachers attend so they can get the benefit of such diversified experience.

Our membership is familiar with the fact that the teaching seminars are financed by the American Foundation for Pharmaceutical Education. This assistance is greatly appreciated as is the financial assistance of the Foundation for the support of the Journal. It is my hope that the American Foundation for Pharmaceutical Education will continue to support the annual seminars for I know of no greater contribution the Foundation can make to pharmaceutical education.

The problem of financing all the activities which the Association should undertake deserves the careful consideration of every member. One of the objectives is the establishment of permanent headquarters and the office of a permanent secretary, who would also function as the administrative head of the Association and editor of the American Journal of Pharmaceutical Education. In a report submitted by Dr. George L. Webster, Chairman of the subcommittee on Permanent Secretaryship, it was estimated that an initial sum of approximately $50,000 would be needed to establish and maintain such an office for the first year. Once established, the office might be continued at an annual outlay of approximately $40,000. Ways and means of financing this office are under active consideration by the Executive Committee. A subcommittee has been appointed to explore possible sources of funds for this purpose. Any ideas about possible sources for obtaining these funds would be welcomed by your president. Some of our members may have an entree not possessed by the members of this subcommittee and in this manner be of great assistance to the Executive Committee.

I wish to express my grateful appreciation to the chairmen and members of the various committees of the Association. Your cooperation is appreciated and I am sure each committee will have a worthwhile report of its activities for the annual convention.

—J. Allen Reese

Health Information Foundation is taking a census of health research activities in the United States—the first comprehensive inventory of its kind ever undertaken. Questionnaires have been sent out to about a thousand individuals and groups connected with universities and colleges, and to government agencies, nurses' organizations and other groups. The Foundation wishes to find out what social science research in health has been conducted recently, especially as related to levels of community health facilities and services, community participation in health programs and in health social action programs. Some of the facts sought are the areas covered by these research projects, research used and plans for publication of current studies. President Blandy of the Foundation points out that the inventory will serve to reduce duplication, speed up the advancement of health research and act as an effective integrative force for research activity in health throughout the country.

The Editor's Page

Many a time the Editor has called attention in these pages to what he believes to be a fact, that the date on which pharmaceutical industry came to aid of pharmaceutical education, by the creation of the American Foundation for Pharmaceutical Education, marked the beginning of a new era for pharmaceutical education and practice in America. It was recognition of the fact that the interests of pharmaceutical education and industry are mutual and that industry has a responsibility in the educative process.

What is most needed now is for pharmaceutical educators and pharmaceutical industrialists to know each other better. Educators need the personal touch. There was a time when this personal contact was lacking between pharmaceutical faculties and leaders in general education. Believing that much could be gained by bringing about a better understanding of the objectives of pharmaceutical education by leaders in general education, Mr. Newton D. Baker, of Cleveland, Ohio, was asked to speak before a general meeting of the American Association of Colleges of Pharmacy at the Cleveland meeting in August 1922. This invitation, however, met with some opposition within our own group. One of the most vociferous against the plan was the late Dr. Henry V. Arny, whom we all loved and respected, who raised the question, "What does Newton D. Baker know about pharmacy?"

Newton D. Baker was a distinguished lawyer and had been Secretary of War in the Wilson Administration. After the war was over he found he had several million men in the army overseas. With no ships to bring them home, short of many months, he established the American University for the soldiers in France. That was one of the greatest educational concepts of the century.

After Mr. Baker addressed the Association meeting in Cleveland, Dr. Arny said to the writer, with even greater enthusiasm than he had opposed the plan, "It was well worth going to the Cleveland meeting to get the viewpoint of a great layman toward the functions, the responsibilities, and the duties of the pharmacist in community life". Since that time some leader in education has been

the speaker at the annual dinner meeting of the boards and the colleges, and many such men have contributed to the general programs of our annual meetings.

Dr. Charles R. Mann, who for many years directed the activities of the American Council on Education, and who was always sympathetic with the pharmacy group and became a sort of unofficial advisor to us, said that not only did general education have something to contribute to pharmaceutical education, but pharmaceutical education had something to contribute to general education. It was a good thing for us to be told that and it placed upon us a responsibility to do that very thing. Dr. Mann also told us that when we could not get any of the great foundations to do for us what they had done for other professions, to go ahead and do those things which we wanted done ourselves. How well we have followed that admonition is now a matter of record. The creation of the American Foundation of Pharmaceutical Education is mute evidence of great progress.

It is no secret that any and every new creation meets with opposition from some quarter. It was no secret when the American Foundation for Pharmaceutical Education was established that some thought its objective was to enable industry to dominate pharmaceutical education rather than to support it. This fear existed in spite of the fact that the declared objectives of the Foundation and the safeguards made possible by the creation of the Board of Grants seemed to assure the highest efficiency and ethics in administration. There are rumors in some quarters that fear still exists. The most effective way to dispel that fear and establish confidence is for educators and men in industry to know each other better. It is with this thought in mind that the Editor hopes that we will adopt the policy in the near future of having some men in industry for after dinner speakers at the joint dinner and on the programs of our general sessions. We should iclude in our programs members of the Board of Grants also. We believe that such a policy will create understanding and cooperation between pharmaceutical educators and men of industry comparable to that which resulted between pharmaceutical educators and general educators and administrators by the same type of program.

Now something has happened which makes us believe a new era has begun in the field of general education. On December 20, 1951,

the National Association of Manufacturers announced the unanimous adoption by its 160-member board of directors, of a Resolution on Support of Educational Institutions which declared that:

"Business enterprises must find a way to support the whole educational program—effectively, regularly and *now*."

Details as to what the Association proposes to do and why, will be found in "Industry Comes to the Aid of Education" in this issue under Miscellaneous Items of Interest. It is a great day when Industry realizes its obligation to the support of education and it is interesting how its objectives parallel those of the American Foundation for Pharmaceutical Education. Pharmaceutical industry has had a part in contributing to the support of general education and in doing so, perhaps builded better than it knew. There are hundreds of cases that can be cited where pharmaceutical industry has contributed great sums to general education and to phases of professional education other than its own immediate sphere. For this we commend pharmaceutical industry and in it we take great pride.

Early in March the Editor had the inspirational experience of sitting through the entire program of the Fifteenth Continuation Study Course in Pharmacy at the Center for Continuation Study at the University of Minnesota.

The program was carried on through three days and two nights with no apparent let up in interest on the part of the more than sixty pharmacists in attendance, the majority of whom came from towns out in the state. It was inspiring to sit and observe the attention that each one gave to the speakers and to the intelligent questions they asked and how intelligently they carried on the discussions. One could not lisen to those discussions without realizing that such groups constitute the backbone of pharmacy.

The lecturers on the program were outstanding members of the medical, the dental, and the pharmacy faculties of the University and representatives from the faculties of the schools of business administration and veterinary medicine and the subjects discussed covered a wide variety of current problems in the related fields.

One night while at the University of Minnesota, I found myself a guest at a meeting of a graduate group of Kappa Epsilon women at the Center for Continuation Study. I discovered some activities

of the sorority that were unknown to me. I learned that the Grand Council of Kappa Epsilon had published a very attractive 22 page brochure entitled "Women in Pharmacy". The first two pages take up a series of questions and answers of particular interest to women, such as "Are there many women pharmacists in the United States?" "Is there any discrimination against women pharmacy students?" "What professional fields are open to a woman pharmacist?" The rest of the brochure consists of a series of brief and to the point descriptions of what is required of a person to give efficient service and the opportunities in each of nine specific fields. Each of these articles was written by a woman pharmacist who is now active in the professional area of which she writes. The brochure presents a more accurate picture and a greater appeal to the student seeking a vocation than any thing that I have seen in print in our vocational area. A high school counsellor in a Minneapolis high school became so impressed with the possible opportunities for women in pharmacy that she arranged for Mrs. Louise Hunkins, president of the Minnesota chapter, to meet the Education Consultant of the Minneapolis School System to discuss the material and possible distribution of it through the Minneapolis Board of Education. In this connection, for details of procedure and progress made, one should read a brief article in Miscellaneous Items of Interestd entitled "Pharmacy as a Profession for Women", and a letter in Gleanings from the Editor's Mail. Both are in this issue of the Journal and both were written by Mrs. Hunkins. The Kappa Epsilon Sorority is to be commended for the constructive work the members are doing.

A propos of our efforts to induce the pharmacy student to make use of the library in his undergraduate days, Miss Bernice L. Dunten, librarian in charge of the pharmacy library at Purdue, has this to say: "Reaching the student is a long drawn out affair, and it must be done little by little, inch by inch. That is the reason I like the indexing journal or the abstracting journal to start the student on his library career. His first abstract with the subsequent search and use of the original journal, and the final completion of a certain period of information on a certain subject will lead the student to the literature of pharmacy with greater success than the use of individual books, for as you know, a book may cover all the phases of one subject, all the related fields, and some packing to make it a

nice shape. There is too much material in a book for a young student to assimilate in a short period of time. Therefore he feels inadequate with a book, where he would feel satisfied with an article in a journal. As he becomes proficient, he naturally turns to the book for a survey after he has flown around among the journals." All of which sounds like good reasoning and what is more important, it has been proven by a lot of experience.

In a special bulletin issued from the headquarters of the American Pharmaceutical Association by Secretary Robert P. Fischelis just before the 1951 meeting of the American Association of Colleges of Pharmacy, he made one of the strongest appeals that has ever been made to provide proper preparation on the college level for the study of pharmacy. This appeal was so pregnant with good common sense that we feel justified in quoting it here:

"As I understand it, there is before the American Association of Colleges of Pharmacy a proposed amendment to the By-Laws which would require member schools to institute a five-year program by 1956. I am particularly concerned with the public reaction that will result from the approval or disapproval of this amendment.

"As you know, we have endeavored here in Washington to foster a more favorable impression of American pharmaceutical education.

"The other health professions are now on a minimum program which includes pre-professional education at the college level. Pharmaceutical education is, generally speaking, not on such a basis at this time. A few individual schools are on this basis and that fact is proving helpful in discussions with Selective Service and Committees which advise the Selective Service Administration and other groups within the government. To establish pharmaceutical education on the proper level with these agencies, it is essential that we be able to show that pre-professional education is a part of the future program of American pharmacy.

"I can tell you from past experience that voting down a proposal to extend pharmaceutical education to provide for proper college preparation is going to have an unfavorable effect, especially when it becomes known that the proposed program would not become effective for five years. It would be an indication that in its planning for the future, the American Association of Colleges of Pharmacy is not taking into consideration the handwriting on the wall for all professions and that it is not even willing to project an extended program into the future. In other words, disapproval of the proposal would brand the Association as one which does not believe that even five years from now, it would be advisable to extend the educational program for pharmacists. Further-

more, it would give aid and comfort to those who are for reducing the program even below the present minimum standards.

"I hope, therefore, that members of the American Association of Colleges of Pharmacy will give due consideration to the effect of their vote on the longer educational program upon government departments, educational agencies and industry. All of these groups, as well as the profession itself, expect pharmaceutical education to keep pace with that of the other health professions."

That was a masterly appeal and no man was better entitled to make it, for no man has accomplished more to make pharmacy a factor to be reckoned with in civic, health, and military agencies on the national level than has Robert P. Fischelis. Those who oppose this program will be the first to squeal if, during states of emergency, pharmacists and pharmacy students and everything pharmaceutical fail to receive the same consideration that representatives from other health agencies get. The time has come when those who oppose placing pharmaceutical education on the same cultural basis as the other health professions, had better remember the handwriting on the wall —"Mene, Mene *Tekel,* Upharsin"—Thou art weighed in the balances and art found wanting.

The National Foundation for Infantile Paralysis, Inc., has asked us to announce the publication of a "Polio Pledge". The pledge explains briefly the scientific reasons underlying the few basic precautions that are recommended by medical and health authorities across the country. It incorporates the latest known facts about the disease as gathered by the Foundation's medical department. It states in simple terms what a person should do and what he should not do if polio strikes a community. A supply is being sent to every school and teachers are asked to give a copy to each child to take home. After the school distribution is completed, the publication will be available to other organizations and the public. The pledge is available at the Foundation headquarters, 120 Broadway, New York 5, N. Y.

The College of Pharmacy of the University of Texas has recently announced the establishment of the Walter Cousins, Sr., Memorial Library Fund by Walter Cousins, Jr., or Dallas, Texas, and Margaret Cousins of New York City, in memory of their distinguished father, pioneer pharmacist and publisher and a leading figure in the development of pharmacy in Texas and the Southwest. His

passing occurred on February 6, 1942. Those of us who knew him admired him for his devotion to his profession. He was ever watchful of its standards. He was a vigorous supporter of education. He was successful in business. He gave time and talents to the welfare of his community and his state. We loved him because of his personal qualities. His warmth of feeling was manifested toward everyone with whom he had a contact. He was a son of the range and a pillar of his profession and he brought dignity to both. His children could have paid no finer tribute to their father's memory or one that he would have appreciated more than they have done in establishing a fund for the promotion of a library for future generations of pharmacy students to use.

June 13, 1952, is the day on which Dr. George Urdang, of the United States of America, was born, seventy years ago. It is also the day one which Dr. Urdang must terminate his services as Professor of the History of Pharmacy at the University of Wisconsin. It is also the day on which the George Urdang Medal will be formally inaugurated as an international award for distinguished work in the historical and socio-historical field of pharmacy.

Fortunately, the American Institute of the History of Pharmacy has not adopted the senseless rule, prevalent in most of our universities, that a man must retire at the most useful period of his life and we trust a way will be found to enable Dr. Urdang to continue the historical research which has so enriched and dignified the profession of pharmacy and stimulated historical research in every pharmaceutical area. A public banquet will be served in Madison on the evening of the thirteenth, honoring Dr. Urdang, to which his host of friends are invited.

Again we record the passing and print memorials for two serants of pharmaceutical education, Prof. Ira W. Rose, of the University of North Carolina, and Prof. John F. Burke, of the University of Georgia, both of whom gave a long, devoted, and efficient service to their respective universities.

At the last moment also comes the announcement of the passing of the father of Dr. Frank E. DiGangi, of the University of Minnesota on March 6. To all the families we extend our sympathies and share with them the hope which the morn of Easter brings.

RUFUS A. LYMAN

Gleanings from the Editor's Mail

Recently a medical magazine "Shikoku Acta Medica" was inaugurated in our University and it will be published bimonthly. It is only a few years since our school was established, in consequence and also because the fund for buying books is very small, our reference library is really inadequate for the proper carrying out of our important studies. Tokushima City, where our school is located, is on the island of Shikoku, separated from the Japanese mainland, so that, because of communication difficulties it is not easy to borrow foreign magazines and other publications from other universities. For these reasons we would appreciate receiving the American Journal of Pharmaceutical Education on an exchange basis. Any interchange of technical or other relevant information would also be very welcome to enlighten and encourage those of us who are devoting ourselves to medical science.

Tokushima University
School of Medicine
Tokushima City, Shikoku, Japan
July 9, 1951

Prof. Tokio Takamori
Editor, "Shikoku Acta Medica"

Wishing to establish closer relations and collaboration in the field of Pharmacy, which is also in accordance with the conclusions of the Fourteenth Congress of International Pharmaceutical Federation, we beg to exchange our scientific-informative **"Arhiv Za Farmacijw"** ("Archive for Pharmacy") which is published by the Pharmaceutical Society of Serbia, for the American Journal of Pharmaceutical Education.

We are willing to send to you regularly our publication in exchange for yours and believe the exchange will be of great mutual advantage and serve as a means for better understanding and bringing closer together of the Pharmacy of our countries.

Belgrade
Yugoslavia
January 1, 1952

Mr. Ph. Milan Grozdanovitch
For the Pharmaceutical Society of Serbia

We are desirous of establishing exchange relations with your "American Journal of Pharmaceutical Education." We would like to receive it among the many other medical publications which are coming to us in exchange.

While our Journal, "Medical Times," incorporating the Long Island Medical Journal, is a general medical periodical, it frequently contains articles in your field.

As the exchange copies that we will receive of your "American Journal of Pharmaceutical Education" will be retained for reference use in the Library of our Association, we trust we will be favored with the issues that you have for the current year, so that our file of your periodical will be complete for this year.

Brooklyn, N. Y.
March 1, 1952 Arthur C. Jacobson, Editor

Two years ago as editor of the Bond, official publication of Kappa Epsilon, national fraternity for women pharmacists, we thought it would be helpful to undergraduates to run a "career series". Girls practicing in different fields of pharmacy were asked to write a description of their work, including special qualifications and preparation.

This series includes: retail, small town and large city, professional, hospital, accounting, research, editorial, teaching and relief work.

Answering many queries about pharmacy as a profession for women led to writing a short and general resume about the training necessary to become a pharmacist. The counsellor at the high school my children attended was so impressed with a profession which can be an outlet for so many talents that she arranged for me to meet the Education Consultant of the Minneapolis Public School System to discuss the material and possible distribution through the Minneapolis Board of Education.

At this writing we have supplied the Board with enough copies for all counsellors in senior high schools, and most of the junior high school counsellors. A notice was to appear in the Board's newsletter describing this new material available and recommending it as being worthy of thorough consideration.

The senior high schools here in Minneapolis have a clinic which is the culmination of an occupational planning unit. Each student makes a tentative choice of profession or job and is given the opportunity of discussing his or her choice with a practicing expert in the field. We have been asked to send a representative to this conference.

The Board has expressed itself as being appreciative of this information and has asked that we send additional information as we receive it.

Plans are under way to make this information statewide.

Minneapolis, Minn. Louise Hunkins
March 1, 1952 2401 Russell Ave., So.

The addition of two years of general college work over the standard four year high school requirement for entrance to the College of Pharmacy of the University of Southern California has caused no appreciable changes in enrollment. This year the enrollment is good. While the GI rush is over, the pharmacy enrollment did not decline as much in phar-

macy as in the university as a whole, and less than was expected. We admitted nearly 80 the first year and 70 this year. The average student had 80 units of college work; half of them had 4 year degrees. Inquiries and requests for bulletins are numerous; we expect to have at least 70 entering students next September. We have never had a large graduate school, but the candidates for the master's degree have increased in number since the degree of Doctor of Pharmacy has been offered, and I believe students with this degree may also wish to remain for the M.S., or Ph.D., (which we hope to offer soon) after the same fashion as the M.D., or the D.D.S., often engage in graduate work. At the same time the Doctor of Pharmacy student may choose to take among his pharmacy electives one of our "Problems" courses, where he will get a taste of independent work and perhaps turn to research as he makes his acquaintance with it. On the campus we find increased interest and respect for our program, and I believe we are receiving more consideration from the university administration than ever before. Our alumni support the program well and in the field at large more than half accept it, which is remarkable in itself, considering the general run of the membership of the retail association in our area. The draft boards were deferring Pharm. D. students even before the general order for deferment of pharmacy students was made. All in all it is a happy picture, and I only wish some other institutions would join us in this venture.

Los Angeles, California
February 27, 1952

Edward S. Brady
University of Southern California

I am still concerned, as I have been for some time, about the comparative lack of evidence of interest in the mechanics of teaching. In recent years we have seen a few papers on this subject presented at the annual meetings but the field certainly has not been exhausted. We have heard much of what to teach, how to arrange it and how long we should take to do it, and these are very important. But the matter of how we may best present what we have to teach is no less important.

Along this line, I should like to see much more done along pharmaceutical lines with audio-visual means. While we have many medical and chemical films, for instance, we have very few which deal with pharmaceutical principles and processes, specifically. It has been my hope to develop moving pictures of many of the general laboratory procedures but time has not yet permitted this. I think a project of this sort would be a good one for the Committee on Audio-Visual Education. I'm sure that if a library of films could be established there would be great demand for them. Perhaps, there would be too much demand all at the same time. In this event the preparation of a number of copies which could be sold to the various colleges would be a possibility. Of course,

the job would have to be well done, and expert personnel would be required. The net effect of such a project would, I am sure, be very beneficial.

University of Michigan
May 10, 1951

E. L. Cataline
Associate Professor of Pharmacy
(Now, Dean College of Pharmacy,
University of New Mexico)

We have been so busy building up high standards in our pharmacy curriculum and attempting to give our students a thorough scientific education that I feel that we have overlooked the development of the student as an individual.

Perhaps what I am saying here sounds like an argument for the five or six-year course; however, this is not what I have in mind at all. What I have in mind for the development of the student as an individual can be done and in some cases is now being done in the four-year course. I feel we should make more of an effort to teach our students the little, every day niceties of life—how to greet people when they are your guests, how to properly thank an individual who has given a talk for your organization or who has performed a service of some type for you, how to introduce his wife or children, how to enter a restaurant, etc., etc. Too few of the students graduating from pharmacy seem to know how to do these things.

For a number of years I have though of giving an informal course but I am not sure that that is the right approach. However, I understand that Dean Muldoon is doing exactly this at Duquesne and feels that his project is most successful. This idea approaches, perhaps, the orientation course which you and Rudd and others gave in the past. I do not know what approach you took in your course but I know that Dean Rudd finally discontinued his because he felt it was not too successful. His, however, as I recall, dealt mainly with how to study, etc., and did not deal with the ordinary little, everyday occurrances. Perhaps more work of this type is being done in the colleges of pharmacy than I am aware of but in casual conversation with various deans and in brief perusals of catalogues from time to time, it appears that very little of this is being done.

More and more of our students are now coming from homes that have the advantages of good economic standing, but a large percntage of them still come from homes where neither the parents nor their associates have the background and experience which would enable them to give our students these "finishing school" touches.

I wish there was some way in which we could find out what is being done in the various colleges along this line and from this assembled data secure enough ideas for the outline of an excellent course. I am not

suggesting that this be made a requirement in our curricu'um, but all information should be available so that anyone desiring to present it could use it as a guide and along with his own ideas, present what he thought would be needed by his students. I would like to see students in pharmacy leave college with confidence and poise that is now too often lacking.

I admit that this is not a "hair-raising project" but in your letter you indicated that you were not necessarily thinking of such ideas. I also realize that we cannot hope to accomplish in our course what has failed to be done in the student's earlier life. We could make more of a contribution than we are now doing. It is a problem that I have thought about for a number of years and would be grateful for any assistance that I could receive on it.

Rutgers University
College of Pharmacy
May 9, 1951

Tom D. Rowe, Dean
(Now, College of Pharmacy,
University of Michigan)

What has happened to the plans for the development of the speakers tour for the member colleges? This is a much needed program to keep the staff, as well as the students, informed of new concepts and to permit us to get more intimately acquainted with the better minds in the various fields of pharmacy. Fostering such a program might warrant the increased dues that are being requested by the American Association of Colleges of Pharmacy.

Two years ago, and even before that, the University of Texas was criticized by the American Council on Pharmaceutical Education for excessive enrollments and an accredited program in light of an over crowding in the field. In the past month I have seen notices indicating that at least two of the member colleges are going on an accelerated program. Also two member colleges advanced as an argument to get a new building, the need for increased enrollments in these colleges. What I would like to know is what has happened to the great concern over excessive enrollments that were in evidence some months ago. Personally, I have never been concerned over excessive enrollments providing the college involved had a good screening program.

How can we change the minds of some pharmaceutical educators that modern pharmacy is a science as well as an art and that pharmacy should remain the major subject of the pharmaceutical curriculum. Educators in other fields are willing to recognize pharmacy as a definite subject in preference to other divisions in such curricula which are fundamentally basic to it.

I wish we could forsee the effects of a five-year program on our graduate program which we have been so long to put on a stable basis

and which are now receiving recognition along with similar graduate programs in our universities.

Austin, Texas
May 1, 1951

Henry M. Burlage, Dean
University of Texas

My thinking on most of what I consider problems is not clear cut or decisive. For almost the first time in my life, I find myself unable to say "This is the way we must go" or "That is the thing we must do".

The word "if" has become important to me. I find myself rationalizing on the basis that if world conditions become such and such—if the military cuts our enrollment to so and so—if medicine becomes socialized—then we should do thus and so.

Perhaps this in itself is a problem of importance, and should be attacked. The weighing of factors that are unpredictable and out of our control should probably be forgotten because of their very elusiveness. In formulating and projecting teaching programs and policies it is perhaps better to go ahead on the premise that whatever we do properly under today's circumstances will continue good despite a rapidly and sometimes radically changing world.

One tendency in our curriculum building does deserve more attention than it is getting, namely, the gradual changing of course names away from pharmacy to titles involving chemistry and pharmacognosy. It is, I think, an outgrowth of departmentalization and the natural desire for each department head to supervise as imposing a list of subjects as possible. It also has one root in the problem of survival where pharmacognosy is concerned. That branch of pharmaceutical education was pretty much obsolete in its old conception and on its way out. The younger pharmacognosists redefined the field in such a way as to include much material already being taught in certain pharmacy courses. This was then moved over, under the new definition, to the pharmacognosy department. The question in my mind is whether this robbing of Peter to pay Paul is good pedagogy. Does it help pharmacy to devitalize its major department in order to salvage one that has become obsolete? Would it not have been better to give the pharmacognosy professors courses in the department of pharmacy where the subject matter was already being taught? As a matter of principle I think the transfers should have been in the titles of the professors rather than in the names of the courses.

Chemistry being so basic to pharmacy makes it easy for the professor of pharmaceutical chemistry to rationalize course material out of the pharmacy department and into his own. I deplore this situation, too, as it adds its devitalizing effect to that set up by the pharmacognosists.

The significance of these transfers of material deepens when one realizes that most of what we used to think of as pharmacy can be easily rationalized into other divisions. Actually the compounding of prescriptions alone defies this technic. Carried to its ultimate we would have colleges of pharmacy without a department of pharmacy, or at best only a token department.

If this situation is unimportant to academic pharmacy, then there is no cause for concern. If, however, every college of pharmacy should have a strong major department, the renaming of courses should be stopped. Let the most qualified men teach them, but within the framework of the pharmacy department.

There should be no quarrel with such a thesis for the simple reason, so aptly stated by Dr. R. A. Deno, that the location of many courses is solely a matter of rationalization. Why not, therefore, rationalize strong pharmacy departments?

University of Washington
June 5, 1951

L. Wait Rising
Professor of Pharmacy

The Committee on Problems and Plans of the American Association of Colleges of Pharmacy has functioned for a score of years in considering the needs of general pharmaceutical education and practice and for several years has considered specifically those areas where general educational problems apply to pharmaceutical education.

The Pharmaceutical Survey recommended the extension of the course in pharmacy to include sufficient general educational subjects to bring the training of pharmaists on a higher plane—the so-called six-year plan.

This proposed six-year plan has met opposition in some institutions and associations, principally because of a general opposition to the lengthening of the pharmacy course. The proposition should have been presented as a pre-pharmacy plan of education, as in the case of medicine, dentistry, law, optometry, osteopathy, and engineering in some universities. This method would provide the schools of pharmacy with first-year students who have a background in general education, including the basic science subjects as well as the cultural subjects.

Many schools of pharmacy have admitted students with advanced standing in these general educational subjects, and the result has been a better class of interested students, who are able to carry the pharmaceutical subjects of the curriculum with satisfactory grades. Schools of pharmacy who admit students directly from high schools have experienced the disappointment and withdrawal of students who were immature and did not realize the necessity of a better foundation in general educational subjects before entering upon the study of a profession. Had these students been required to have one or two years of pre-

pharmacy education, they would not have become frustrated in their efforts to secure a pharmaceutical education. Further, the general educational subjects in the pre-pharmacy program would provide a basis for following another profession or course of study should they not be successful or satisfied with the study of pharmacy.

The establishment of the pre-pharmacy requirements would not present great difficulties, as the schools of pharmacy which are part of universities may cooperate with the Arts and Science group for pre-pharmacy training for their entering students, and the independent schools of pharmacy will attract students trained in pre-pharmacy subjects in a university or other Arts and Science Schools.

The adoption of the pre-pharmacy requirement would greatly enhance the value of teaching in schools of pharmacy. The four-year curricula of schools of pharmacy are now overcrowded with general and cultural subjects, together with the strictly pharmaceutical subjects. The curriculum composed of strictly pharmaceutical subjects could be expanded to include other desired pharmaceutical subjects, as well as give opportunity for more attention to the required professional subjects.

Personally, I recommend that the Committee on Problems and Plans of the American Association of Colleges of Pharmacy work for the early implementation of the pre-pharmacy training. Surely, the pharmacist of tomorrow should be able to take his place with the graduates of the other professions.

Many schools of pharmacy find it advisable to hold summer classes in general educational subjects such as English, chemistry, physics, mathematics, etc., in order that the student may progress to the next higher class as a regular student. However, judging from some of the statements from schools of pharmacy concerning the offerings of summer classes, some schools have offered strictly pharmaceutical subjects, many of these being subjects of the junior and senior classes.

It is suggested that the American Association of Colleges of Pharmacy take note of these apparent irregularities and initiate steps to curtail the offering of strictly pharmaceutical subjects in summer courses, except in those cases where the school is on a trimester or four-quarter basis.

Baltimore, Md.
July 19, 1951

B. Olive Cole
University of Maryland

Notes and News

University of Arizona.—Visitors at the college of pharmacy during January included Dean Emeritus Charles H. Stocking of the college of pharmacy of the University of Michigan, Dean and Mrs. Elmon M. Cataline of the college of pharmacy of the University of New Mexico, and Mrs. R. A. Lyman and Dean Emeritus R. A. Lyman of the University of Nebraska and first dean of the college of pharmacy of the University of Arizona.—Alpha Nu chapter of Phi Delta Chi recently initiated Mr. Jack Knowles, pharmacist of Flagstaff and a member of the Arizona State Board of Pharmacy.—Dr. Doris B. Hawkins joined the pharmacy staff in September 1951, and Dr. Albert Picchioni, who received the doctorate recently from Purdue, joined the pharmacology staff in January 1952.—The guest speaker at the February meeting of the student branch was Rev. Glenn C. McGee, pastor of Trinity Presbyterian Church of Tucson.—Dean T. G. Chapman, of the college of mines, was guest speaker at the February meeting of Rho Chi.—Guest speakers in the commercial pharmacy course during January and February were Messrs. Glenn Hoopes of the Thatcher Pharmacy, Joseph Schlauser of the Abbott Laboratories, Elmer V. Staude of Brunswig Drug, Marvin Rohrer of the Rohrer-Bloom Drug Company of Prescott, and Andrew P. Martin Drug Stores of Tucson.—Mr. Elias Schlossberg, president of the Arizona Hospital Association, discussed hospital pharmacy before the class in commercial pharmacy in March.—Memorial services for Dr. W. Kirby West, lecturer in pharmacology from September 1950 to January 1952, were held in the Unitarian Church in Tucson on February 17.—Dr. Albert Picchioni and Dr. W. R. Brewer discussed the various phases of drug-addiction and the laws governing the distribution of narcotics before the Parent-Teachers Association of Blenman School on March 12.—Dr. Doris B. Hawkins presented a paper on Enteric Coating of Pills and Tablets before the Physical Science Section at the annual meeting of the Arizona College Association in Phoenix on March 22.—The girls gave a welcoming banquet for their new advisor, Dr. Doris B. Hawkins, in February.—Five new members were initiated by Kappa Psi on February 19.—Officers for the Arizona Alumni Chapter of Rho Chi are Sister Elizabeth Joseph, president, Mr. Charles Nielson, vice-president, and Dr. Doris B. Hawkins, secretary-treasurer.—Dr. D. W. Sherwood discussed radio active materials at a meeting of the Alpha Pi Chapter of Rho Chi on March 11.—The new pharmacognosy laboratory has tables equipped with microscope lights. Along the walls are cases in which are displayed a complete selection of official and non-official drugs of plant and animal origin as well as fresh and whole preserved specimens of medicinal

plants produced in the garden and greenhouse. Above the blackboards are displayed colored illustrations of the habitats of many drugs of foreign origin. The microscopes are equipped with triple nose pieces, each having an ocular micrometer and polarized film attachments for crystal study. Two petrographic microscopes are available for research. The laboratory carries the usual equipment for preparation of sections, milling and photomicrographic and spectroscopic work.—Dr. Picchioni's work is centered on a study of the extract of veratrum viride using a special technique in order to determine the effect of this drug on the peristaltic contractions of the intestine and also in the atropinized intestinal segment to discover whether or not veratrum possesses a neutropic, as well as a musculatropic, action on the tissue.

Brooklyn College of Pharmacy.—Mr. George R. Christ, who served the college and the Kings County Pharmaceutical Society, in various capacities from the president of the Society to the treasurer of the college for over forty years, died February 16, 1952 at the age of 78.—Dr. Tristram W. Metcalfe, who served Long Island University as president from 1942 to December 1950, died February 16, 1952.—Over the Lincoln Day recess, one-half of the senior class visited the Lilly plant at Indianapolis and the other half, the Bristol-Meyers Laboratories in New Jersey.—The alumni association is sponsoring the Dr. Joseph S. Goldweg Memorial Fund, the purpose of which is to raise contributions from the alumni to establish a scholarship or equip a laboratory for research projects.

University of Buffalo.—Miss Myrna J. Williams has been chosen as the "Outstanding Senior Woman" in the school and will receive one of the first awards granted by the Women's Auxiliary of the A.Ph.A.—Through the courtesy of Dr. Louis C. Kress, Director of the New York State Institute for the Study of Malignant Diseases, the entire senior class was given a full day's clinical study in April on the recognition of malignancy.—The Women's Auxiliary of the Erie County Pharmaceutical Association has donated $500 to be used to refurnish the women's lounge in Foster Hall.—The Daw Drug Company, Inc., of Rochester, has established a $300 scholarship as an annual award to a pharmacy student.—The Erie County Association and the Local Branch of the A.Ph.A. will be hosts to the Erie County Medical Society on April 1. The impact of the Durham-Humphrey act will be the subject of a discussion led by Dean Hugo H. Schaefer.—The Rho Chi society initiated twelve students in March.—On March 23, the Beta Gamma Phi Sorority became the Alpha Theta chapter of the pharmaceutical sorority, Lambda Kappa Sigma. Fifteen undergraduates and eight graduates were initiated on that date.

Butler University.—Six students were graduated on January 24, 1952.—The annual visit of seniors to the Lilly plant took place in January.—The college of pharmacy has been accredited as a Class A institution by the American Council on Pharmaceutical Education.—Dr. A. A. Har-

wood spoke recently over the Indianapolis Station WFBM on "Pharmacy and Its Relation to the Community".—Plans are being made for the dedication of the new pharmacy building in May.

University of Colorado.—The College of Pharmacy and the Rocky Mountain Medical Representatives Society were co-sponsors of the second druggist seminar which was held weekly at the Medical School in Denver from January 16 through February 20. Representatives of manufacturers, members of the pharmacy faculty, and state board members discussed recent advances in medical research.—The first Rocky Mountain Drug Conference sponsored by the Colorado State Pharmaceutical Association was held in Denver on February 9 and 10. Representatives were present from the colleges of pharmacy, the state associations and the boards of pharmacy of the states of Colorado, New Mexico, Utah, Wyoming, and Montana. Problems of mutual interest in pharmacy were discussed and the conference was so successful that a second one has already been planned for next year.—Dean Charles F. Poe has been elected president of the Colorado-Wyoming Section of the American Society of Bacteriologists. He is also a member of the Executive Committee of the Rocky Mountain Branch of the Society for Experimental Biology and Medicine.—Dr. Norman F. Witt, who is president of the Colorado Basic Science Board, pre-medic advisor at the University, and a member of the Executive Committee of the national association, attended the annual meeting of the American Association of Basic Science Boards held in Chicago recently.—President Wayne Norman of the State Association discussed the professional aspects of retail pharmacy before the student branch in February.—Rho Chi pledged six students at the March meeting and four pharmacy students have been pledged by Iota Sigma Pi, women's chemistry honor society.

University of Connecticut.—Mr. Felix Blane, director of pharmacy of the state of Connecticut, has been awarded an honorary membership in the Connecticut graduate chapter of Kappa Psi. He was also presented with a jeweled fraternity badge and a gold Greek letter identification button.—Dr. Paul J. Jannke has been named national president of Rho Chi and will be installed at the annual meeting in August in Philadelphia.

Creighton University.—The college was host to the Midwest Association of Hospital Pharmacists in February. As a contribution to the program, Mrs. Ann Czerwinski, assisted by members of her staff, presented a series of laboratory experiments demonstrating the action of drugs.—**Hospital Progress** recently published an article by Dean Wm. A. Jarrett entitled "Hospital Pharmacy and the March of Time".—On December 10, 1951, Prof. C. Henry Sprague presented, on a television program, the history of quinine and demonstrated its method of production from cinchona bark.—Dean Jarrett and Mr. Ferraro attended the Iowa State Pharmaceutical Association convention recently in Des Moines.—Dr. Victor E. Levine attended the meeting of the American Association for the Advancement of Science in Philadelphia last December.

Drake University.—Fifty-seven students visited the plants of the Upjohn Company and of Parke-Davis in March.—On March 17, a number of men were officially pledged to Kappa Psi and Dr. Frank Eby, of Temple University, Grand Regent of Kappa Psi, was the speaker on the occasion. He told the story of the development of the fraternity from its beginnings, the accomplishments of the past and the plans for the future. At the annual reunion banquet in February, Dr. F. C. Coleman, chief pathologist of Mercy Hospital, spoke on "A Pharmacist's Charge". At this meeting also, plans were formulated and initiated for the establishment of an Iowa Graduate Chapter of Kappa Psi.—The Lambda Kappa Sigma sorority initiated three pledges in March.

Duquesne University.—During a four-day Red Cross Bloodmobile visit to the campus, the school of pharmacy supplied a higher percentage of student and faculty donors than any other department of the university.—During the first semester the Hugh C. Muldoon and Pharmacy Alumni Foundation contributed $2500 to the school for the purchase of research apparatus.

University of Florida.—The college of pharmacy is conducting a series of telecasts over Station WMBR in Jacksonville under the direction of the Bureau of Professional Relations. The telecasts give the public a brief glimpse of the research which is being conducted at the college on plants native to Florida.—Dr. Esteban Szabo, professor of pharmacognosy at the University of Chile, has completed a course of study in advanced pharmacology under Dr. Lauretta Fox and chromatography with Dr. W. M. Lauter. He has been investigating the possibility of cortisone or its precursors in the roots of Chilean species of Dioscorea and Chenopodium.—An infrared spectrophotometer has been installed in Leigh Hall for the use of the college of pharmacy and the department of chemistry in their research problems.—The Kappa Psi fraternity is now at home in its house at 117 N.W. 17th Street.—Jack Thaddeus Bryan, B.S., Howard College, was awarded the doctorate in February and is now engaged in research in pharmaceutical chemistry for Merck & Co. at Rahway, New Jersey. His dissertation was on "Medicinal Derivatives of p-Tertiary-Butylbenzoic Acid".

George Washington University.—For the second time in the last five years, the student branch won honorable mention "in the College Division for their Pharmacy Week Display".—The Annual University Career Conference was held on February 20. Major General Lewis B. Hershey, Director of the Selective Service System and the Honorable Robert H. Jackson, Association Justice of the U. S. Supreme Court, addressed the entire conference prior to the assembly of the individual forums. Those interested in pharmacy heard a panel discussion presented by Dr. Robert P. Fischelis, Mr. F. Royce Franzoni, Dr. Karl Bambock, and Dr. George Archambault.

University of Georgia.—Don Cooper, pharmacy senior, was awarded $50 for second prize in a district window display contest sponsored by

Proctor and Gamble.—Phi Eta Sigma, campus wide first year honor society for scholastic achievement, selected nine students from the whole university student body. Of this number, four were pharmacy students. Membership is available to second year men who in their freshman year make an average of 92 or more for the first two quarters or 90 for the first three quarters.—The program of the first meeting of the student branch consisted of a movie "The Big Campus" which showed the campus activities of the university in color. At the second meeting, Miss Ann Seawell, director of the University Placement Bureau, spoke on "Etiquette to Use During an Interview for a Job".—Dr. Jack Cooper, director of pharmaceutical research for the Ciba Pharmaceutical Products, addressed the student body on January 10.

Howard College, Birmingham.—Thelma Coburn, executive secretary of the Alabama Pharmaceutical Association and the Birmingham Retail Druggists Association, addressed the student branch on February 5. She outlined the history and the activities of the two associations.—Dean Emeritus Henry S. Johnson, who organized the college of pharmacy of the University of Connecticut a quarter of a century ago and who guided its destiny until he retired, was a campus visitor in January.—Dean B. V. Christensen of Ohio State University and Dr. R. A. Deno, Director of Public Relations of the American Council on Pharmaceutical Education, spoke before the student branch on February 19. Dean Christensen spoke of the personnel and the activities of the Council and Dr. Deno's topic was "Pharmacy in France".—The student branch sponsored a lecture in March by Dr. George Valley, Research Bacteriologist for the Bristol Laboratories, on "Trends and Developments in the Field of Antibiotics".—Alumna Jennie Crotwell, chief pharmacist at the Georgia Baptist Hospital in Atlanta, and secretary-treasurer of the Southeastern Hospital Pharmacist's Association, has been elected president of the Georgia Society of Hospital Pharmacists, and alumnus Terry B. Nichols, chief pharmacist at the Veterans Hospital in Thomasville, Georgia, has been elected secretary of the latter association.—Grand Secretary Roy S. Kelley visited the local chapter of Kappa Psi on March 15 and 16.—Ten members of Phi Delta Chi gave blood for the Red Cross Drive on March 12.

Idaho State College.—The student branch is responsible for the presentation of a number of excellent films to the student body during the past semester.—Mr. Ifft, Editor of the Idaho State Journal, was the January dinner speaker for Rho Chi. He gave an account of his experiences at the Inter-American Press Association meetings held in Uraguay last summer.—This semester the class in manufacturing pharmacy is preparing medicinals for use at the Idaho State Mental Hospital. Students in the class in drug assay are learning the methods of analysis of these products and are doing the control work in their production.—Prof. Ivan Rowland is program chairman of District No. 7, which will meet in Spokane on May 2-3. Dean Roscoe will present a paper on this

occasion on "Inconsistancies in the Internship Requirments".—Dr. Rufus A. Lyman, Jr., is conducting the work in physiology and pharmacology while Prof. Carl Riedesel is on leave doing graduate work at the State University of Iowa.—Profs Jarvis and Rowland are supervising ten senior students who are studying research methods in the field of antibiotics.—Dr. Otto Rahn, professor of microbiology, is serving as exchange professor this semester at the University of Nebraska. His assistant, Miss Rasma Zemgales is persuing graduate studies at the University of Nebraska.

University of Illinois.—Dean E. R. Serles served as senior dean and all-over administrative officer during the months of January and February during the leave of absence recently granted Dr. A. C. Ivy from his duties as vice-president.—A memorial service for Dr. H. L. Davis, who died August 17, 1951, was held on January 15, 1952, in the Chicago Illini Union Building, in commemoration of his twenty-five years of teaching service. The faculty tribute was read by Dr. L. C. Dolk, and Dr. Henning Larson, professor of English and dean of the College of Liberal Arts, delivered an address on the importance of the teacher as an integral part of educational disciplines.—A chapter of Phi Delta Chi, to be known as the Alpha Sigma chapter, was activated on January 3, 1952. Eighteen students, formerly members of the Independent Men's Professional Organization, constitute the charter members. Grand Secretary Rand P. Hollenback of Columbus, Ohio, was the installing officer and Mr. G. W. Young of Rock Island, President of the Illinois Pharmaceutical Association, was the guest speaker at the ceremonial banquet.—Mr. C. M. Blamquist, who joined the staff as instructor in zoology two years ago, was granted the degree of Doctor of Philosophy in Zoology by the University on February 10.—The senior class visited the laboratories and warehouses of the Walgreen Company in March. This is an annual affair to acquaint the students with the method of operation these departments by a large chain organization.—Dr. D. L. Deardorff was recently awarded a patent covering a process for preparing fur felt. The process employs surface active agents to improve the quality of the finished felted material. Dr. A. W. Harvey of the Mellon Institute is a co-patentee of the process.—Mr. Thomas G. Crawford, director of personnel for the Walgreen Company, has been honored by the presentation of a scroll, the inscription on which notes that the Advisory Committee of the College of Pharmacy has made contributions of note to the progress of pharmacy in the state of Illinois over the five year period under Mr. Crawford's leadership, counsel, and guidance as chairman.

State University of Iowa.—The Pharmacy in the General University Hospital has been remodeled to provide more efficient working conditions for the pharmacists and thus facilitate better service to hospital patients. The Pharmacy is operated by the College's Department of Drug Service and serves the General Hospital, the Children's Hospital and the Psychopathic Hospital. It is also a teaching unit where senior

students in pharmacy gain practical experience in compounding and dispensing to the public under the supervision of four registered pharmacists.—Five juniors and two seniors have been elected to membership in Rho Chi.—Wanda J. Butler and Lt. Solomon C. Pflag have been elected to active membership in Sigma Xi. Miss Butler is currently working toward the doctorate with a major in pharmacy. Lt. Pflag received the master's in 1950, after which he returned to duty in the U. S. Naval Hospital Corps School, U. S. Naval Hospital at San Diego, California.—Dean R. A. and Mrs. Kuever, Dean Emeritus Wilber J. Teeters, Prof. and Mrs. Louis C. Zopf, Prof. and Mrs. J. W. Jones, Donald J. and Mrs. Sieleman, Warren Meyer and several junior and senior students attended the 73rd annual convention of the Iowa Pharmaceutical Association at Des Moines on February 24-26. Dean Kuever is a member of the Executive Committee of the Association.—Dean Emeritus Teeters, who was reelected president of the Iowa Veteran Druggists, presided at a luncheon sponsored by that group at which Dr. Ivor Griffith, dean of the Philadelphia College of Pharmacy and Science, was guest speaker.—Forty-nine junior and senior students were guests of the Parke-Davis and of the Upjohn companies in March.

University of Kansas.—At recent meetings of the student branch discussions were given by Prof. C. F. Peterson on research opportunities in pharmacy and by Dr. J. H. Burckhalter on those in pharmaceutical chemistry. These talks were part of series designed to acquaint students with the possibilities existing in graduate fields related to pharmacy.—Profs. D. G. Wenzel, C. F. Peterson and Dean J. A. Reese attended the January Midwestern Conference sessions in Kansas City.—Forty-one junior and senior students toured the Lilly plant between semesters.—The student branch has organized an employment service for pharmacy students in order to supply seniors with information concerning available jobs and locations, to list summer employment opportunities and to enable employers to contact prospects.—On January 11 and 12, Dean Reese met with the committee in charge of the seminar on pharmaceutical chemistry which is to be held next summer at the University of Michigan.

University of Maryland.—On February 12, the school presented a thirty minute television program over WHAL-TV. The subject discussed was Digitalis. Dean Noel E. Foss stated that the pharmaceutical industry is successfully meeting the challenging problem of drug standardization. Dr. Frank J. Slama gave a brief historical background of digitalis, as well as the important macroscopical diagnostic characteristics of the flowers and the leaves used in the identification of this plant, and noted the important leaf constituents which have action on the heart and mentioned briefly the role the botanist and pharmacognosist play in the production of commercial digitalis. Dr. C. T. Ichniowski demonstrated the methods of administration of digitalis assay solution to a frog and a guinea pig and the various degrees of digitalis action on the

frog heart. A special demonstration featured the action of digitalis glycosides on the heart of the chick embryo. This latter bioassay method is under investigation at the school for the purpose of ascertaining whether or not this method will parallel more clearly clinical posology of digitalis preparations. Dr. Benjamin F. Allen showed samples of pharmaceutical preparations used by the medical profession, including the powdered digitalis leaf, capsules and tablets of digitalis, the tincture, and also the chief constituents of digitalis—digitoxin in the crystalline, tablet and ampule forms. He also demonstrated the percolation procedure used in the preparation of the tincture.—A group of third and fourth-year students visited the Parke, Davis & Company plant on February 4-5.—Dr. Francis S. Balassone resigned from the faculty as assist ant professor of pharmacy at the end of the first semester and has purchased the Overlea Pharmacy in Baltimore.—Mr. Paul Pumpian, who received the B.S. in Pharmacy degree in June 1950, has been appointed as an assistant in pharmacy administration.—A special feature of the evening party given by the Alumni Association on February 14, was the showing of the technicolor movies of the Maryland-Tennessee Sugar Bowl Football Game. The proceeds realized from the affair including those realized from the advertisements in the printed program for the occasion, will be used to assist in furnishing the reception room of the Kelly Memorial Building, and providing a portrait of Dr. Kelly for that room.

University of Michigan.—Dr. R. A. Deno, professor of biological science at Rutgers University college of pharmacy and for the past year director of education relations for the American Council on Pharmaceutical Education, has been appointed as professor of pharmacognosy at the University of Michigan, effective Septmber 1, 1952.—Prof. F. F. Blicke is president of the local chapter of Sigma Xi.—Prof. Lee Worrell is vice-president of the Michigan Academy of Pharmacy.—The seniors visited the Upjohn plant on March 30-April 1.—Two seniors have been invited to join Phi Lambda Upsilon and Rho Chi has pledged three undergraduates, one graduate student, and one faculty member.—Beginning in September 1952 the college will offer graduate courses designed to improve the quality of teaching in pharmacy subjects. They will be given under the general heading of "Academic Pharmacy" and are intended for future pharmacy teachers and for those already teaching in the field. Two courses will be offered the coming year, both under the direction of Dr. R. A. Deno, who by training and experience is well qualified to initiate this type of instruction. The titles of the courses are, "Current Position of Pharmaceutical Education in America" and "Current Problems in Pharmaceutical Education in America". Each course will carry a credit of three semester hours. After 1952, work in this field will be offered in the summer session as well as during the regular school year.

University of Minnesota.—The Fifteenth Continuation Study Course in Pharmacy was offered by the University in the Center for Continuation Study on March 3 to 5. Sixty-five retail pharmacists were in attendance. Lecturers were drawn from the faculties of the College of Pharmacy, the Schools of Medicine, Dentistry, Veterinary Medicine and Business Administration and the State Department of Health. Guest lecturers were Profs. Louis C. Zopf of the State University of Iowa and Laverne D. Small of the University of Nebraska. Following the final dinner on March 5, Dean Emeritus Rufus A. Lyman of the University of Nebraska delivered the annual Melendy Memorial Lecture in which he discussed the functions, duties and responsibilities of the practicing pharmacist.—Colonel Lloyd E. Harris of the Army Chemical Center, Maryland, who is on leave of absence from the College of Pharmacy of Ohio State University, was a campus visitor on February 12, conferring with faculty men in pharmacy, chemistry and entomology.—A Beckman Spectrophotometer, Model DU, with an ultraviolet accessory set, was recently added to the special equipment.—The father of Dr. Frank E. DiGangi passed away in Cleveland, Ohio, on March 6, 1952.

University of Mississippi.—Sixteen seniors were graduated on January 31, 1952.—A total of 142 students, exclusive of pre-pharmacy freshmen registered for the second semester.—Dean Emeritus C. H. Stocking of the University of Michigan, has joined the faculty to serve the second semester as part time professor of pharmacy. Previous to their annual visit to the Mississippi campus in February, Prof. and Mrs. Stocking spent two months vacationing in Hawaii.—Grand Secretary-Treasurer Ray S. Kelley and Mrs. Kelly visited the local chapter of Kappa Psi in March.—Dr. John L. Voigt has purchased a drug store in Collierville, Tennessee, located about fifty-five miles from the campus. Since his teaching duties will limit his presence in the store to week-ends only, he has employed a resident manager for the store. Dr. Voigt has had extensive experience in retail pharmacy and he intends to use his store as the basis for research in pharmaceutical administration and economics.—Sixty seniors and juniors visited the Lilly plant in February. Several members of the group at a later date made oral reports before the local student branch on their observations of the manufacture of various types of products.

University of Montana.—Two grants totaling $16,000 to aid research being conducted in the school of pharmacy by Dr. Muriel R. Loran, assistant professor of pharmacy, were recently announced by the Montana Division of the American Cancer Society and the Damon Runyon Memorial Fund for cancer research. Dr. Loran is investigating the effect of a high molecular weight fraction isolated from the resin of podophyllum on animal tumors. She is working in cooperation with Dr. Abe Towbin of the Ohio State University, department of pathology. The $5,000 grant of the American Cancer Society is the first grant made by the Society in Montana and the project has been given a top priority rating. The

grant is to be known as the Louise Gwenn Hanford Memorial Research Grant and is for "maintenance-of-project", operating expenses for a year. The Damon Runyon Grant of $11,300 will be used to purchase a Klett Electrophoresis apparatus.—On February 12, the junior and senior students were guests of the McKesson-Robbins Company of Spokane for a breakfast, which was followed by one of the trade schools which the company is sponsoring.

University of Nebraska.—Dr. LaVerne D. Small presented a lecture on "Carcinogenesis and Chemotherapy of Cancer" before the 15th Continuation Study Course in Pharmacy which is sponsored by the college of pharmacy of the University of Minnesota and was held in the Continuation Study Center on March 3-5.—Dean Emeritus Rufus A. Lyman delivered the Melendy Memorial Lecture as the closing event of the same program on March 5. The subject of his lecture was "An Appraisal of the Functions and Duties of the Professional Pharmacist".—At the February dinner meeting of the Alpha Epsilon chapter of Rho Chi, tentative plans were made for the participation of representatives of the chapter, together with representatives of Alpha Alpha chapter of Rho Chi at Creighton University, in a joint program to be presented before the April meeting of the Nebraska Pharmaceutical Association in Omaha. A committee was appointed to confer with the Creighton chapter to further the plans for the program. Both groups were addressed on February 16 by Dr. Rollo Feldkamp, a member of the minnesota chapter of Rho Chi, now a member of the research staff of the Smith-Dorsey Company of Lincoln. His subject was 'The Activities and the Responsibilities of the Practicing Pharmaceutical Chemist".—Dean Joseph B. Burt attended the meeting of District No. 2 in Baltimore, Maryland on February 24-26 and spoke on the topic "A Review of Current Problems in Pharmaceutical Education".—At the February meeting of Kappa Psi, Gale E. Toller, who was the chapter delegate to the national convention held at Detroit in December, gave a brief report on the national affairs of Kappa Psi.—Miss Marilyn Watson, who received her degree in January, has accepted an appointment on the staff of the Methodist Hospital in Omaha and began service on March 1.

University of New Mexico.—Total enrollment for the spring semester is 98, which is a decrease of 9.2% from the fall semester.—Dean Cataline and Dr. Castle attended the Rocky Mountain Drug Conference in Denver in February.—Dr. McDavid has been appointed a member of the Extension Committee of the University.—Miss Francis Blair is teaching First Aid to military personnel at the Sandia Base. Ninety are registered for the course.—The student branch was shown the film "Inside Sharpe & Dohme" on February 7.

University of North Carolina.—The sixth annual meeting of the Board of Directors of the North Carolina Pharmaceutical Research Foundation, Inc., was held on February 6. It is reported that after five years of operation, it has realized $99,151.50 in donations, and has given $29,000

to the university for graduate fellowships, research equipment, and library materials. Operating costs have been $3,800 which is relatively low.—The North Carolina Pharmaceutical Association has posted a Mortar and Pestle Name Plate in permanent recognition of the 260 members and friends of the Association who donated $100 or more to the building fund of the North Carolina Institute of Pharmacy building in Chapel Hill. The officers of the Association and of the Board of Pharmacy are now located in the building.—William J. Sheffield has completed his reseach and has gone to the University of Texas as assistant professor of pharmacy.—The juniors and seniors recently visited the Merrell, the Parke-Davis, and the Upjohn plants.—Mr. Jackson Andrews, '15, president of the Emerson Drug Company, has presented the pharmacy library a handsome wall display case in memory of his brother, Julius F. Andrews, '15, USN Air Corps, who was killed in World War I.

North Dakota Agricultural College.—Dr. Sidney S. Chernick, who comes from the University of California, has been made associate professor of pharmacology and Dr. Charles S. Shull, from the University of Kansas, has been appointed associate professor of pharmacy.—Several pieces of specialized equipment has been acquired by the school. Among them is a Parr high pressure hydrogenation equipment, a stainless steel steam-jacketed kettle, and a constant temperature circulating water bath. —A new laboratotry has been equipped for the classes in pharmacology.

University of Oklahoma.—The second annual pharmacy seminar for retail druggists sponsored by the University of Oklahoma Pharmacy Alumni Association was attended by 46 druggists from 32 towns in Oklahoma and surrounding states and by 91 university students. The speakers discussed the prescription department as a franchise, liability insurance, visual merchandising, hospital fluids, and the Durham-Humphrey Amendment.—The Alumni Association has sponsored a brochure giving a pictorial history of the college. It is being sent to all alumni and prospective students.—The role of the pharmacist and his contribution to better living is being spotlighted this spring by the university's radio station in an 18-week series called "Pharmacy at Work". The purpose of the series, which is given by the faculty, is to inform the public about the pharmacist's background, education, and objectives.— The university is presenting certificates to the high schools which graduated the students who ranked scholastically the best in the freshman class at the university. Seventy high schools in the state have been so honored.—The pharmacy faculty recently entertained District No. 11 of the Oklahoma Pharmaceutical Association in Chickasha with a program during which each faculty member told the group about the aims and objectives of his courses.—Students are highly commendatory of the weekly lectures on commercial subjects arranged by the Oklahoma Drug Travelers.—Rho Chi has initiated twelve new members in recent months. —Mrs. Lois G. Walter, full time pharmacy librarian, has been elected to represent departmental librarians in the Library Administrative Coun-

cil.—Dr. John B. Bruce has been appointed a member of a committee to plan a series of seminars on teaching for the entire faculty of the university.

Oregon State College.—Fifty-four students from the junior and senior classes visited the Parke, Davis, the Eli Lilly, and the Abbott plants in February.—McKesson & Robbins presented their sales school for seniors on January 22.—The third edition of the textbook "Pharmaceutical Preparations" by Dean George E. Crossen and Dr. Karl Goldner of Tennessee has been recently released.—Nearly 100 practicing pharmacists from various Oregon communities attended the half day seminar at the school in January. Prof. Leo A. Sciuchetti presented the background of federal legislation pertaining to drugs and events leading to the adoption of the Durham-Humphrey Bill. R. S. McCutcheon spoke on the most important features and regulations of the Bill, and Dean Crossen concluded the formal part of the seminar with a discussion of future possibilities in drug legislation. Open discussion by the pharmacists of specific problems pertaining to the legislation followed.—Graduate training at Oregon State College leading to the Ph.D. degree with a major in pharmacy and its related fields has been approved by the Oregon State Board of Higher Education. The Ph.D. degree will be available in the following departments of Pharmacy: pharmacy, pharmacology, pharmacognosy and pharmaceutical analysis.

University of Pittsburgh.—Two hundred and fifty persons attended the annual "Open House" on February 28. After conducted tours of the building, a slide film in color that depicted the education of the pharmacist, was presented. Beginning with the freshman year, the film shows scenes from classrooms and laboratories to illustrate techniques acquired by the pharmacist throughout his four years in school. An analogy to the famous Cathedral of Learning is built up by placing blocks in an outline of the Cathedral that depicts each year of a pharmacist's education and how his learning and skills are built upon the foundation set during the first year. The script for the film was written by Dr. Robert Sager, with pictures by Mr. Paul J. Wurdack. The narration was by Dr. Joseph Biancullis.—The first master's degrees in Pharmacy Administration were conferred by the graduate school on February 1, 1952. The recipients were Joseph D. McEvilla and George B. Hook. These men were appointed last year to the first George A. Kelly, Sr., teaching fellowships in pharmacy. These fellowships, which were set up in honor of Mr. Kelly by the firm that bears his name, are open to graduate students who are preparing for teaching careers in any one of the five major branches of pharmacy. Messrs. McEvilla and Hook are presently members of the college staff and plan to continue in the teaching profession.—Mu chapter of Phi Delta Chi was reactivated on February 19, 1952.

Purdue University.—Some remodeling is being done in the pharmacy building in connection with the installation of an elevator.—Dean Glenn

L. Jenkins has been elected vice-president of the American Council on Pharmaceutical Education. The Dean gave the commencement address at the St. Louis College of Pharmacy and Allied Sciences on February 21, 1952.—Samuel T. Coker, B.S. in Pharmacy, at Alabama Polytechnic Institute, has entered for graduate work majoring in pharmacology and W. H. Hassler, hospital pharmacist at the University of Tennessee is pursuing graduate work in hospital pharmacy.—Edward Fingl, a graduate of Purdue, has completed work for the doctor's degree in pharmacology at the University of Utah and is now in Edinburgh, Scotland, pursuing postdoctorate studies on a Fulbright Fellowship.

Philadelphia College of Pharmacy and Science.—This College, the Jefferson Medical College of Philadelphia, and the Jefferson Medical College Hospital, have again announced a cooperative program of graduate study and internship in hospital pharmacy. The increased demand for hospitalization, the rapid expansion of the public and private hospital systems, and other factors have shown the needs of specialists skilled in hospital pharmacy practice who possess an advanced education and degree. Only a limited number of recent graduates of accredited schools of pharmacy will be accepted for the 1952 fall term. Combined instruction and internship will be for a period of approximately twenty-two months and upon satisfactory completion of this period of study and training, students will be awarded the degree of Master of Science in Pharmacy, a Certificate of Internship in Hospital Pharmacy, and will be recommended as competent to assume charge of a hospital pharmacy. —The College was asked to participate in the second semester of the famous WFIL-TV University of the Air of which Dr. Roy K. Marshall is director. The program started on February 5 and members of the faculty will speak each Tuesday morning over a period of fifteen weeks, with the general theme of the series being the expanding horizons in public health and comfort.—Founders' Day was highlighted by the mid-winter reunion dinner of the Alumni Association. The principal speaker on the occasion was Dr. Kendall A. Elsom, color television coordinator for the Smith, Kline, and French Laboratories, who explained in detail the origin and growth of the use of color television as a teaching tool in medicine and surgery. Using slides and motion pictures, he illustrated the recent heart operation performed in Los Angeles and seen at the same time in Chicago and New York.—The College, Temple University School of Pharmacy, the Drug Salesman's Association of Pennsylvania, the Philadelphia Association of Retail Druggists, and the Philadelphia Branch of the A.Ph.A. were the sponsors of a series of seminars for pharmacists that were held at the College and at Temple University School of Pharmacy during the winter months. The subjects discussed covered drug store management and the professional problems of pharmacy in drugstores. — On March 10, forty-one new members of Rho Chi were installed at a dinner ceremony. Dean Roy A. Bowers of Rutgers University directed the installation and Col. Samuel Wetherill

was the speaker. In his address, entitled "A Prescription for Survival," Col. Wetherill urged a scientific approach to and treatment of national problems. He pleaded with pharmacists to insist on creative and realistic national planning, especially in the matter of scientifically grounded planks in coming convention platforms to win both domestic and foreign confidence in America's leadership toward world order.

Rhode Island College of Pharmacy.—Following a lecture by Dr. Robert P. Fischelis, the student branch was reactivated and new officers elected. Drs. R. E. Brillhart and R. E. Elbin were elected faculty advisors for the year, a revised copy of the Constitution and By-Laws was approved and representatives of the branch were chosen to attend the student conference to be held at St. John's University in Brooklyn on April 26.—On March 27, Senator Primo Iacobucci, spoke to the branch on "What State Board Expect of Pharmacy Graduates." — Dr. Robert I. Ellen has been appointed professor of pharmaceutical chemistry.—Prof. Christopher Mitchell of the department of mathematics has been elected to Sigma Xi at Brown University, where he is pursuing graduate studies.

Rutgers University.—The faculty held a farewell luncheon for Dr. Richard Deno on January 17, at which time he was presented with a two-suiter traveling case. Dr. Deno will be on leave until September in order to resume his duties as Director of Educational Relations of the American Council on Pharmaceutical Education. In September he will become professor of pharmacognosy at the University of Michigan.—Mr. Theodore Mileski has joined the staff as assistant professor of biological sciences and Prof. Michael Iannarone has been made acting chairman of the department.—Final plans have been made for the coming spring seminar to be held at the college by the Northern New Jersey Branch of the A.Ph.A. The seminar will include a series of refresher lectures in bacteriology, dispensing, pharmacology, and organic pharmaceutical chemistry given by the pharmacy staff.

University of Southern California.—The school has added to its facilities three new laboratories and a small research laboratory. The new space will be occupied by pharmacology, organic chemistry, manufacturing pharmacy and cosmetology. The dean's office was also remodeled. These additions provide ample physical space with equipment to carry out the expanded program.—Thirty-eight students were graduated in February and took the state examination. One of them, the president of Rho Chi chapter, made the highest grade in years on the state examination, 96.4%.—The requests for information about the program leading to the doctorate degree has increased over last year which indicates a heavy demand on the part of applicants for admittance. A class of approximately 75 will be accepted for the fall semester this year.

Medical College of South Carolina, School of Pharmacy.—The name of the state's medical school has been changed by legislative action to "The Medical College of South Carolina". This was the name given the

school when it was opened in 1823 and was operated by the Medical college of the State of South Carolina. "The Medical College of South Carolina" closed down as such in 1938 and was absorbed by the Medical College of the State of South Carolina.—The east wing of the Medical College quadrangle, now under construction, will be ready for occupancy by the beginning of the fall session.—The $9,000,000 teaching hospital is also under construction and pile driving for the foundation of the Pine Haven Tuberculosis Sanatorium is already begun.—A $1,000,000 student dormitory, with lounges, recreation rooms and a modern cafeteria has been approved by the state legislature. Also, a new nursing home and county health center building will be constructed adjacent to the college, which, when completed, will meet in part, the requirements of the state medical center.—Four juniors and one member of the faculty have recently been elected to Rho Chi.

St. Louis College of Pharmacy and Allied Sciences.—Sixty-seven seniors received the Bachelor's degree in Pharmacy, and five the Bachlor of Science in Industrial Pharmacy at the February commencement. Dean Glenn L. Jenkins was the commencement speaker. His topic was "Professional Freedom Has Its Price".—An all day refresher course was given on March 6. Subjects were discussed that were of interest to the practicing druggist. 193 registered for the program. A banquet was served at 6:30 and open house held after the dinner. 600 visitors viewed the exhibits.—A grant of $8,350 for the study of virus infection in tobacco leaf tissue has been made by the United Public Health Service to the department of biology. Dr. Frank Mercer, who, in collaboration with Prof. Barry Commoner of Washington University has developed a technic for isolating extremely small amounts of mosaic virus from infected tobacco leaf tissue, will direct the study.—The College will offer, in September, a program of study leading to the master's degree in pharmacy. The major will be in industrial pharmacy with choice of minors in other department subjects. The industrial program includes courses in statistics, production costs, plant management and operations, unit operations, pharmaceutical production and quality control.—The enrollment for the second semester is 269.—Members of the colleges faculty have been presenting short lectures under the heading, "Minutes of Knowledge" at the monthly meeting of the St. Louis Retail Druggists Association. Subjects of current scientific interest and drug store operational problems make up the topics discussed.—Prof. Charles C. Rabe of the department of business administration spoke on the topic, "The Doctor Measures the Detail Man" before the Eastern Marketing Section of the American Pharmaceutical Manufacturers' Association in New York City on January 30.

Temple University.—The junior class visited the new Smith, Kline and French wholesale warehouse in Philadelphia on February 11.—Dean J. B. Sprowls discussed "Some Newer Classes of Therapeutic Agents" and Dr. Alfred Martin spoke on "Solving Modern Dispensing Problems"

recently before the pharmacy seminar sponsored by the Philadelphia branch of the A.Ph.A. Dean Sprowls also spoke before the eastern division meeting of the American College of Apothecaries in Atlantic City in January.—Mr. Walter Foulkrod, lecturer in pharmaceutical law, discussed the new Durham-Humphrey Act before the Lackawanna County Pharmaceutical Association at Scranton in March and Mr. Carson Frailey, Jr., spoke on the same subject before the Philadelphia Branch of the A.Ph.A. in February.—The school presented a professional relations program before the senior class of Temple University School of Medicine on March 1. Prof. John A. Lynch, professor of pharmaceutical economics, and representatives of several manufacturing concerns were on the program, which is held annually under the auspices of the department of internal medicine of Temple's School of Medicine.—Recent speakers at convocations were Dr. W. Paul Briggs, secretary of the American Foundation for Pharmaceutical Education; Dr. Rudolph L. Blythe, director of pharmaceutical research at the Smith, Kline, and French Laboratories; and Dr. Robert L. Johnson, president of Temple University.

University of Washington.—Drug Service, which furnishes medicine and medical laboratory supplies to the other health science groups, is getting a new manufacturing laboratory. A new ointment mill has been added to the equipment. Dr. Elmer Plein is in charge of the service.—Dr. Louis Fischer was elected the First Grand Vice-President at the December meeting of Kappa Psi at Detroit. Dr. Fischer attended the meeting of the U.S.P. Revision Sub-committee in New York, January 31-February 1.—Dr. Heber W. Youngken, Jr., gave a lecture on "Pharmaceutical Economics" before the February meeting of the King County Medical Society which resulted in the strengthening of interprofessional relationships. Three hundred physicians were in attendance.—Twenty-seven students visited the Parke-Davis, the Eli Lilly and the Upjohn plants in March.—Dr. Nathan Hall, research chemist on the pharmacy staff, described his studies on the production and characteristics of wines at the Stewards and Caterers Association in February.—The College held its annual Postgraduate Refresher Course for the pharmacists of the state on March 17 and 18. The program was almost entirely clinical in nature.

University of Texas.—Thirty seniors were graduated at the end of the first semester.—Dean Henry M. Burlage and Dr. W. R. Lloyd attended the meeting of the Southwest Texas Druggist's Association in Uvalde in February.—Furniture is being installed in the new pharmacy building. Classes will occupy it with the beginning of the summer session.—Mr. Walter Cousins, Jr., of Dallas and Miss Margaret Cousins, Associate Editor of Good Housekeeping Magazine, have announced a gift of $5,000 to the College for the establishment of the Walter Cousins Pharmacy Library Memorial Fund, in memory of their late father, W. H. Cousins, Sr., long time secretary of the Texas board of pharmacy and editor of the Southern Pharmaceutical Journal.—Mr. William J. Sheffield has been

appointed to the staff as assistant professor of pharmacy. He received his pharmaceutical training at the University of North Carolina where he received the bachelor's and master's degrees and expects to complete work for the doctorate the coming summer.—Dr. C. O. Wilson addressed the local chapter of Sigma Xi in February and Dr. Daniel P-N. Tsao spoke before two high school classes in senior sociology in March on the subject of narcotics.—Dr. W. R. Lloyd has received notification of the granting of a patent on tortilla flour. This was the result of a research conducted in Mexico while he was associated with the Armour Research Foundation.

University of Utah.—On January 8, Dean L. D. Hiner addressed the National Hotel Greeters Association in Salt Lake City on a subject of their own choosing, "Pharmaceutical Education in Utah". He later spoke to the University of Utah Woman's Club on "The Science and Art of Perfumery".—Dr. Ewart A. Swinyard served as chairman of the section on anticonvulsants at the meetings of the American Society for Pharmacology and Experimental Therapeutics held in New York City on April 14-18. Dr. Swinyard, with collaborators, presented three papers during the period.—Dr. George Osborne, in cooperation with Miss Isabel Anderson, pharmacy and medical librarian, and Miss Edith Rich, chemistry and engineering librarian, is offering a new course to graduate students in pharmacy which includes discussions of the literature of the many areas of pharmacy. The course has been designed to teach typical content and location in library lay-outs, as well as "Routes through the literature whereby it can be exhausted".—A number of special problems of local and general interest are being investigated by the staff and students of the college of pharmacy. Dean Hiner has one group of students studying the native Daturas and another the native rhubarbs. Dr. Jack Orr is directing a phytochemical investigation of zoaptale, a plant indigenous to Mexico, and Dr. Osborne is working with two student groups, one studying problems in tablet manufacture and the other interested in fresh fruit tinctures. Dr. Swinyard is directing groups of students in experimental anuria, a prescription survey of Utah, assay of analgesic drugs, and the physiology and therapy of convulsive disorders.

Medical College of Virginia.—Dean R. Blackwell Smith, Jr., presented a paper on "Newer Toxicants of Medical, Pharmaceutical, and Economic Interest" in December on a symposium at the Philadelphia meeting of the American Association for the Advancement of Science. On January 15 he attended an Inter-industry Conference on the use of chemicals in foods, sponsored by the Manufacturing Chemists' Association in New York City. Dean Smith also spends two days or more each week in conference in Washington with the National Research Council in connection with his duties on the committee studying the use of chemicals in foods.—Dr. H. B. Haag attended the fall meeting of the American Society for Pharmacology and Experimental Therapeutics held at Omaha in December.—On March 19 and 20 the school of pharmacy and the

Virginia Pharmaceutical Association co-sponsored a professional pharmacy seminar for graduate and retail pharmacists.—Dr. M. L. Neuroth attended the biennial convention of the Professional Interfraternity Conference as a delegate of Kappa Psi, which was held recently at Old Point Comfort. Dr. Neuroth is chairman of the professional section of the Virginia Pharmaceutical Association and a member of the professional section of the Richmond Retail Druggists' Association.—Dr. J. W. Boenigk is the co-author of a paper recently published in the practical edition of the **Jour. A.Ph.A.,** entitled "The Texas Pharmaceutical Survey"; and Dr. W. E. Weaver has had two scientific papers dealing with work done on fungicides published in the **Journal of Organic Chemistry.** —Mr. George Surber, senior pharmacy student, is the 1951-52 president of the student body for the Medical College of Virginia. This is the first time a pharmacy student has been so honored at this institution.—The senior class visited the Eli Lilly plant on April 6-9.—Faculty members have been attending "College Days" and "Career Days" at high schools throughout Virginia on behalf of pharmacy and the medical college.

Wayne University.—Sixteen seniors were graduated at the mid-year commencement.—Dean R. T. Lakey spoke on "Pills and Potions of the Michigan Frontier" at a joint meeting of the Windsor and Detroit Algonquin Clubs on February 1.—Dean Lakey has been honored by being granted a life membership to the Michigan State Pharmaceutical Association.

West Virginia University.—The college of pharmacy has been moved to a new location. Science Hall has been remodeled and the college will occupy three of the four floors. Storage and classroom space has been increased and the laboratory for pharmacognosy has been newly equipped. Recent additions include a refractometer, an electrovisometer and an electrophotometer. Shortly after relocation, the college participated in Greater West Virginia Week-end during which period about 200 visitors were conducted through the new quarters and the displays aroused a great deal of interest among the visitors.

University of Wisconsin.—The Wisconsin Alumni Research Foundation awarded eight assistantships in the School this year, covering a wide range of research activity in such fields as drug deterioration, physics of tablet compression, counter-current extraction, and chromatographic separation.—Four M.S. and two Ph.D. degrees were granted at the close of the first semester.—In the undergraduate program, the School is experimenting with a new approach to what was previously a lecture course in "drugstore practice." Seniors, in discussion groups of twelve, meet four hours with each instructor (including the state-board and state-association secretaries); discussions center about the understanding of contemporary pharmacy and the application of knowledge in daily practice, with regard to such topics as ethics, public health, and education.—Mrs. W. O. Richtman has presented a collection of books to the

School from the library of the late Prof. Richtman.—A refrigerator for biological products has been added to teaching equipment in dispensing. For the study of molecular films, especially emulsion films, a Langmuir Hydrophile-Lipophil Balance has been obtained.—The symposium on atomic radiation sterilization, sponsored in Washington by the Atomic Energy Commission, was attended by Drs. Louis W. Busse and Takeru Higuchi. Possibility of opening a research area here in the use of waste fission products for sterilization is being considered.—Prof. Takeru Higuchi discussed the application of physical chemistry to pharmaceutical systems before the seminar group of the Upjohn Company at Kalamazoo in February. He was guest of honor at a dinner the preceding evening attended by members of the pharmaceutical research and development group, of whom about 8 out of 10 now hold Wisconsin degrees.—At the invitation of the World Health Organization, Prof. George Urdang has contributed a monograph on "The Development of Pharmacopoeias" to the W.H.O. **Bulletin** as an introduction to the issuance of the first "Pharmacopoea Internationalis."—Prof. Urdang, as director of the American Institute of the History of Pharmacy, also announces publication of "A Concise History of Pharmacy in Puerto Rico," authored by Dean Luis Torres-Diaz, which is the first of a planned series of Latin-American monographs in English and Spanish or Portuguese.—Drs. Melvin W. Green and Lloyd M. Parks attended the joint meeting of three chemical subcommittees of the U.S.P. in February at New York.—In March Dr. Rudolph H. Blythe of Smith, Kline and French Laboratories and John S. McCauley of the U. S. Department of Labor were guests of the School as participants in the all-University Job Opportunities Conference.—All-University committees that include pharmacy representation this year are the Committee on Fellowships and Scholarships (Dr. Busse), Committee on Courses (Dr. Green), and Committee on Public Functions (Dr. Parks).

University of Wyoming.—Mr. Vernon Snacker, a 1951 pharmacy graduate, is now registered in the Graduate School working toward a master's degree with a major in chemistry and a minor in pharmacy.—Dr. Theodore O. King attended the Pharmacy Subsection meetings of the American Association for the Advancement of Science at Philadelphia in December. Dr. King presented a paper entitled "The Treatment of Experimental Nicotine Poisoning" before the joint meting of the Denver Branch of the American Federation for Clinical Research and Rocky Mountain Section of the Society for Experimental Biology and Medicine held in Denver on March 8.

Miscellaneous Items of Interest

MEMORIALS

IRA WINFIELD ROSE

Ira Winfield Rose, professor of practical pharmacy at the University of North Carolina since 1931, died in Watts Hospital in Durham on the morning of January 14 after an illness of only a few days. He was born in Bentonville, North Carolina on September 21, 1880. For nearly fifty years he played a leading role in the advancement of pharmacy, first as a student in the State University (1904-06), from which he was graduated in 1906 with the degree of Ph.G., then as a retail pharmacist for 25 years and a member of the state board of pharmacy for 20 years, and since 1931 as a member of the faculty of the school of pharmacy at Chapel Hill. He has held every office in the North Carolina Pharmaceutical Association including the presidency (1921-22), and has been a member of the American Pharmaceutical Association since 1912. He took an active part in alumni affairs of the University and served on many alumni groups and committees. On July 1, 1951, he retired as a full-time member of the faculty, but consented to teach for another year on a part-time basis. Upon his retirement, the 1951 graduating group presented him with a television set and the pharmacy faculty gave him a handsome silver tray. Later in the summer an appropriately bound book of letters from associates, friends and former students was presented to Professor Rose by President J. Paul Gamble, of the North Carolina Pharmaceutical Association.

Professor Rose is survived by his wife, the former Miss Juanita Pearl Penny, of Wake County; one son, Winfield P. Rose, retail pharmacist of Raleigh; one grandson, Daniel Winfield Rose; and a brother and a sister.

Funeral services were held at the Baptist Church in Chapel Hill with interment in the local cemetery.

— Alice Noble

JOHN F. BURKE

The death of Professor Burke, 51, professor of accounting at the University of Georgia, occurred at his home in Athens shortly after midnight Friday, February 1, 1952.

A native of Milford, Massachusetts, Professor Burke came to the University of Georgia, College of Business Administration in 1940 as an assistant professor. He was a graduate of Boston University, where he

received his B.B.A. degree in 1926, and his M.B.A. in 1929. He had also done graduate work at Harvard College and the University of Chicago.

Professor Burke began his career with the Bethlehem Shipping Corporation, and later he worked with Dennison Manufacturing Company, and as a field representative for a private school. He was instructor of accounting, business law, and economics at New Hampton Junior College, and for several years he was head of the accounting department and director of athletics at Nichols Junior College. Both schools are in New England.

A member of the American Institute of Accountants, Mr. Burke became a member of the Atlanta Chapter of Georgia Society of Certified Public Accountants. He was also a member of Beta Gamma Sigma and Phi Kappa Phi honor societies. He served as chairman of the board of control of the Pandora, University Yearbook. He was a member of the Catholic Church and was active in lay affairs of the Church.

In the twelve years of service at the University, Mr. Burke rose from status of assistant professor to full professor. Ten years ago Professor Burke became interested in accounting as applied to the drug store and developed a special course in pharmaceutical accounting. His work with the University of Georgia, School of Pharmacy was characterized by his sincere interest in his students who obtained a full appreciation of accounting principles as they apply to the retail drug field. We were particularly appreciative of his efforts in behalf of the retail druggist, although not a pharmacist he developed a keen interest in pharmaceutical education. The University had agreed to relieve him of teaching duties of the Spring quarter in order for him to complete work on a manual for pharmaceutical accounting.

— Kenneth L. Waters

Notice to Authors of Papers

A review of the manuscripts of papers presented at the annual meetings in years past shows clearly that many of them have been written with the sole idea of being presented by the author in person. Many are not properly paragraphed, punctuated or capitalized and are frequently infiltrated with notes that are illegible to anyone but the author and many of them are blurred carbon copies.

These papers should be written also for publication since that is the course they take. For publication, the original paper (not a carbon copy) should be presented. It should be typewritten, double spaced, punctuated and capitalized so that no changes other than typographical errors need to be made in the galley proof when presented to the author for correction. Changes made by authors in the galley proof have at times cost the Association more than $50 per issue. This is a needless an unjustifiable expense that can be avoided by a little care on the part of authors.

— Rufus A. Lyman, Editor

The American Association of Colleges of Pharmacy Program for The Fifty-Third Annual Meeting

Philadelphia, Pennsylvania
August 21 and 22, 1952

Saturday, August 16

9:30 A.M. Meeting of the Executive Committee
2:00 P.M. Meeting of the Executive Committee

Sunday, August 17

9:30 A.M. Meeting of the Executive Committee

FIRST SESSION

Thursday, August 21, 1:15 P.M.

1. Roll Call
2. Appointment of Committee on Resolutions
3. Appointment of Nominating Committee
4. Appointment of Auditing Committee
5. Credentials Committee
6. Report of President, J. Allen Reese
7. Report of the Secretary-Treasurer, Louis C. Zopf
8. Report of the Executive Committee, Joseph B. Burt
9. Report (Abstracts) of Standing Committees
   (a) Committee on Relations of Boards and Colleges, Thomas D. Rowe
   (b) Committee on Libraries, Charles O. Lee
   (c) Committee on Activities for Alumni, Linwood F. Tice
   (d) Committee on Problems and Plans, Rufus A. Lyman
   (e) Committee on Status of Pharmacists in Government Service, Charles H. Rogers
   (f) Committee on Educational and Membership Standards, Arthur E. James
   (g) Committee on Pharmaceutical Research, Ole Gisvold
   (h) Committee on Graduate Study, Earl P. Guth
   (i) Committee on Curriculum, Stephen Wilson
10. In Memoriam

Joint Banquet A.A.C.P. and N.A.B.P.

Thursday, August 21, 6:00 P.M.

Joint banquet with National Association of Boards of Pharmacy
Toastmaster: N.A.B.P. President
Address: W. Paul Briggs

*This program has been so arranged at the request of the officers of the A.Ph.A. in order to fit into the plan for the celebration of the Centennial of that organization. It is not the intention of the officers of the A.A.C.P. that this plan will be followed in the future.

Conference of Teachers of Graduate Instruction

Thursday, August 21, 8:10

Teachers' Conferences

Friday, August 22, 9:00 A.M.

Conference of Teachers of Biological Sciences
Conference of Teachers of Chemistry
Conference of Teachers of Pharmacy
Conerence of Teachers of Pharmaceutical Administration

11:30 A.M.

Joint Teachers' Conference

SECOND (FINAL) SESSION

Friday, August 22, 1:15 P.M.

1. **Recommendations from Teachers' Conferences**
2. **Address of the President-Elect, Troy C. Daniels**
3. **Address, Ivor Griffith**
4. **Report of the Editor of *The American Journal of Pharmaceutical Education*, R. A. Lyman**
5. **Report of The American Council on Pharmaceutical Education, P. H. Costello**
6. **Report of the Seminar on Pharmaceutical Chemistry, Tom D. Rowe**
7. **Reports (Abstracts) of Special Committees:**
   - **(a) Committee on Predictive and Achievement Tests, Carroll Gustafson**
   - **(b) Committee on Personnel Problems, E. A. Brecht**
   - **(c) Committee on Emergency Problems, Hugh Muldoon**
   - **(d) Committee on Teachers' Conferences, H. G. Hewitt**
   - **(e) Committee on World Congress for Pharmaceutical Education, George Urdang**
   - **(f) Committee on Audio-Visual Education, Donald C. Brodie**
   - **(g) Committee on Consttiution and By-Laws, Lloyd M. Parks**
   - **(h) Committee on Functions of the American Association of Colleges of Pharmacy, Arthur H. Uhl**
   - **(i) Committee on Office of Permanent Secretary of A.A.C.P., Arthur H. Uhl**
8. **Reports of Special Representatives:**
   - **(a) Delegates to the American Council on Education, Noel E. Foss, B. V. Christensen, George L. Webster**
   - **(b) Representative to the National Drug Trade Conference, Hugo Schaefer**
   - **(c) Directors of the American Foundation for Pharmaceutical Education, H. C. Newton**

The 1952 Teachers' Seminar on Pharmaceutical Chemistry

The Teachers' Seminar on Pharmaceutical Chemistry will be held at Ann Arbor, Michigan, July 7-12, 1952. The College of Pharmacy of the University of Michigan was selected to be the host institution by the Executive Committee of the American Association of Colleges of Pharmacy.

This Seminar will be the fourth to be sponsored by the American Association of Colleges of Pharmacy. The funds for the previous seminars and for this one are provided by the American Foundation for Pharmaceutical Education.

A committee for planning the Seminar has been appointed. Its membership is, Dr. Tom D. Rowe, Dean, College of Pharmacy, University of Michigan, Chairman, Dean J. B. Burt, Dr. F. F. Blicke, Dr. L. M. Parks, Dean J. A. Reese, and Prof. L. C. Zopf.

The Committee has made preliminary plans for the program which will include all branches of pharmaceutical chemistry. It is expected that teachers from most of the Colleges of Pharmacy will be in attendance The emphasis throughout the program will be on teaching methods, course contents and new developments.

Arrangements have been made to house and feed those attending in one of the new dormitories. A section of one of these units has been reserved so that all present can be housed and fed under one roof. The tentative program follows:

THE TENTATIVE PROGRAM
TEACHERS' SEMINAR ON PHARMACEUTICAL CHEMISTRY

To be held in the Amphitheater, Rackham Building,
University of Michigan, Ann Arbor,
July 7 to 12, inclusive, 1952.

Monday Morning, July 7

9:00-9:30—Registration, Lobby of Rackham Building

9:30—Opening Session—Dr. F. F. Blicke, Presiding
Welcome and Statement on Objectives of the Seminar—Dr. Tom D. Rowe, Chairman of Seminar Committee, University of Michigan

9:45—Teaching Patterns in Pharmaceutical Chemistry
Dr. R. A. Deno, Director of Education Relations, American Council on Pharmaceutical Education

10:15—Discussion

10:30—Intermission

10:45—**The Basic Chemistry Courses as Taught in a University Chemistry Department**
Dr. Leigh C. Anderson, Chairman, Department of Chemistry, University of Michigan
11:05—**Discussion**
11:15—**Basic Chemistry Courses as Taught in a Department of Basic and Pharmaceutical Chemistry**
Prof. Ray S. Kelley, Massachusetts College of Pharmacy
11:35—**Discussion**
11:45—**Lunch**

Monday Afternoon, July 7

Dean J. Allen Reese, Presiding

1:00—**Improving the Effectiveness of College Teaching**
Dr. Earl W. Anderson, Ohio State University
1:45—**Discussion**
2:00—**Intermission**
2:10—**Teacher Training for Pharmaceutical Chemistry**
Dr. Lloyd E. Blauch, U. S. Office of Education
3:00—**Discussion**
3:20—**Tour of College of Pharmacy, Hospital Pharmacy, and Student Health Service Pharmacy**

Tuesday Morning, July 8

Dean J. B. Burt, Presiding

9:00—**The Introductory Course in Chemistry**
Dr. Jacob Cornog, Professor of Chemistry, University of Iowa
9:30—**Discussion**
9:45—**Screening of Students for the Introductory Courses in Chemistry**
Dr. J. H. Hodges, University of Michigan
10:15—**Discussion**
10:30—**Intermission**
10:40—**A Decade of Devotion to Pharmaceutical Education**
Dr. W. Paul Briggs, American Foundation for Pharmaceutical Education
11:30—**Discussion**
11:45—**Lunch**

Tuesday Afternoon, July 8

Professor L. C. Zopf, Presiding

1:00—**The Course in Inorganic Pharmaceutical Chemistry**
Dr. J. E. Orr, University of Utah
1:45—**Discussion**
2:00—**Intermission**
2:10—**A Course Combining Quantitative and Qualitative Analysis**
Dr. P. F. Weatherill, University of Michigan
2:30—**Discussion**

2:40—Motion Pictures—"The Analytical Balance and Its Use"
"Techniques of Titration"
3:10—Demonstrations College of Pharmacy

Wednesday Morning, July 9

Dr. L. M. Parks, Presiding

9:00—Should Quantitative Analysis and Drug Assay be given as a Unified Course
Prof. R. S. Kelley, Massachusetts College of Pharmacy
9:30—Discussion
9:45—Relationships between Drug Assay and Manufacturing Pharmacy
Dr. Melvin W. Green, University of Wisconsin
10:15—Discussion
10:30—Intermission
10:40—Undergraduate Instruction Needed in Analytical Pharmaceutical Chemistry for Industrial Analytical Control
Mr. Fabian Maurina, Parke, Davis, and Company
11:10—Discussion
11:45—Lunch

Wednesday Afternoon, July 9

Dr. R. A. Deno, Presiding

1:00—A One-Semester Six Credit Hour Course in Introductory Organic Chemistry
Dr. J. O. Halford, University of Michigan
1:20—Discussion
1:35—Scope, Objectives and Applications of a Course in Biochemistry
Dr. H. B. Lewis, University of Michigan
2:05—Discussion
2:20—Intermission
2:30—Industry's Requirements for Pharmaceutical Research Personnel
Dr. Max Tischler, Merck and Company
3:15—Discussion
3:30—General Discussions on Basic Chemistry Courses in the Pharmacy Curriculum
4:00—Demonstrations College of Pharmacy

Thursday Morning, July 10

Dr. F. F. Blicke, Presiding

SYMPOSIUM: Teaching Organic Pharmaceutical Chemistry

9:00—Prerequisites, Objectives, and Scope of the Courses in Organic Pharmaceutical Chemistry
Dr. Geoerge L. Webster, University of Illinois
9:25—Discussion
9:35—Organic Chemistry and Organic Medicinal Products as a Combined Course
Dr. E. V. Lynn, Massachusetts College of Pharmacy
9:55—Discussion
10:05—Intermission

10:15—Teaching the Chemistry of Synthetic Organic Medicinal Products
Dr. Walter H. Hartung, University of North Carolina
10:40—Discussion
10:50—
Dr. Ole Gisvold, University of Minnesota
11:15—Discussion
11:45—Lunch

Thursday Afternoon, July 10
Dr. F. F. Blicke, Presiding
SYMPOSIUM (concluded)

1:00—Teaching the Chemistry of Organic Medicinal Products Using a Pharmacological Classification
Dr. J. H. Burckhalter, University of Kansas
1:25—Discussion
Dr. L. A. Woods, University of Michigan
1:45—Teaching the Chemistry of Organic Medicinal Products Using a Chemical Classification
Dr. G. P. Hager, University of Maryland
2:10—Discussion
2:20—Intermission
2:30—Laboratory Work in the Chemistry of Organic Medicinal Products
Dr. John B. Data, Purdue University
2:50—Discussion
3:00—Where is the Pharmacy of Organic Medicinal Products to be Taught?
Professor L. F. Tice, Philadelphia College of Pharmacy
3:25—Discussion

Thursday Night, July 10
....., Presiding
7:30—Recent Developments in Analytical Pharmaceutical Chemistry
Dr. W. W. Hiltie, Eli Lilly and Company
8:15—Discussion
8:30—Recent Developments in the Field of Organic Medicinal Products
Dr. L. A. Sweet, Parke, Davis, and Company
9:15—Discussion

Friday Morning, July 11
Dr. L. F. Worrell, Presiding

9:00—Teaching Physical Chemistry and Its Pharmaceutical Applications
Dr. T. Higuchi, University of Wisconsin
9:30—Discussion
9:45—Teaching Instrumentation as a Separate Course
Dr. F. M. Goyan, University of California
10:15—Discussion
10:30—Intermission

10:40—Coordination of the Courses in Basic and Pharmaceutical Chemistry
Dr. L. M. Parks, University of Wisconsin
11:10—Discussion
11:45—Lunch

Friday Afternoon, July 11

....., Presiding

1:00—The Place for Graduate Programs
Dr. G. B. Beal, Mellon Institute
1:45—Discussion
2:00—The Need for Graduate Programs in Analytical Pharmaceutical Chemistry
Dr. J. L. Powers, N. F. Committee
2:40—Discussion
3:00—Intermission
3:10—A Graduate Program in Analytical Pharmaceutical Chemistry
Dr. L. W. Worrell, University of Michigan
3:40—Discussion

Saturday Morning, July 12
Dean Tom D. Rowe, Presiding

9:00—How Developments in Radio-Activity will effect the Teaching of Courses in Pharmaceutical Chemistry
Dr. J. E. Christian, Purdue University
9:40—Discussion
9:50—Applications of Radio-Active Tracer Techniques
Dr. D. L. Tabern, Abbott Laboratories
10:30—Discussion
10:45—Miscellaneous Problems from the Floor
11:45—Adjournment

Plant Science Seminar to Meet in Philadelphia

The 29th Annual Plant Science Seminar will be held in Philadelphia, Pennsylvania from Tuesday through Saturday, August 12-16, 1952 with headquarters at the John Bartram Hotel. Dr. Frank H. Eby is local secretary for the meeting and his committee consists of Dean Joseph B. Sprowls of Temple University School of Pharmacy and Dr. Marin S. Dunn and Dr. Edmund H. McLaughlin of the Philadelphia College of Pharmacy and Science.

Among the features of the program will be trips to the Wyeth penicillin plant, a mushroom-growing farm, the DuPont gardens, and the Sharpe and Dohme laboratories. A full session will be devoted to the course content and to general procedures in the lecture and laboratory phases of pharmacognosy. It is planned also to discuss the inter-relationships of pharmacognosy and other plant sciences. There will be opportunity for the members to present the results of their research.

A detailed program will appear in the Preliminary Bulletin to be mailed in May.

Edward P. Claus, Secretary

Industry Comes to the Aid of Education

"Business enterprises must find a way to support the whole educational program effectively, regularly—and **now.**"

With this resolution, the National Association of Manufacturers has launched an unprecedented, nation-wide campaign to get businessmen to come to the financial aid of America's public and private schools.

The NAM's campaign, which has the approval of leaders in education, the professions, and in industry, was announced by Earl Bunting, managing director. In letters to the more than 17,000 members of the association, Mr. Bunting asked each to take the lead in a drive to aid both public and private schools in his own community and also "to arouse other businessmen to do their part."

Mr. Bunting's appeal revealed that the NAM, which for years has voiced industry's interest in education, has now gone further and is urging business enterprises to assume a larger and more concrete responsibility for the financial support of education.

The association took this new position because influential leaders in industry and business were concerned over relative "freeze" in funds available for education at the very time when educational needs were expanding and educational costs were mounting even more rapidly.

It was pointed out that the progressive rate principle in income taxes has halted the building of private fortunes, which once formed the source of large endowments and other bequests to education.

At the same time, Federal taxes are taking more and more of the income earned in each community and state, leaving less money available for education and other needs. Compounding these forces has been inflation, which, by halving the value of the dollar, doubled the need for dollars just to maintain existing faculties, facilities, and standards.

This squeeze of economic forces, which threatens the very existence of many institutions of higher learning, and is weakening all education formed the background for the NAM's decision to act.

"The part which our national school system, both public and private, and from elementary grades through professional and technical schools, can play in preparing Americans to meet present and future problems, is being jeopardized by inadequate financial support," Mr. Bunting said in his letter to NAM members.

"Individual responsibility must be assumed by every citizen in order that a solution will be found to the financial problems of education. Hence your Association is urging each of its more than 17,000 members to join this effort to provide adequate support for our nation's schools.

"The ever-present pressure for Federal aid to education, which could only mean eventual Federal control of education, can be successfully counteracted only by the determination of businessmen to provide adequate funds for educational purposes."

Mr. Bunting's appeal had been authorized by the NAM's 160-man board of directors, who represent members in all parts of the United States. The directors adopted a resolution urging members to:

1. Continue efforts to secure adequate local, state, and private support for elementary and secondary schools, and

2. Exert every effort to make available to higher education the supplemental private financial support essential to meet the educational needs of our youth, American industry, and the nation.

"Essential to the perpetuation of the American way of life is a system of education which includes both privately and publicly supported schools, colleges, and universities," the resolution continued

"The privately supported institutions are in a critical financial plight. The public institutions, state and local, are likewise having serious financial difficulties.

"Industry recognizes the essential contributions made by these institutions to the development of leadership to manage its increasingly complex operations, the contributions in both pure and applied scientific research, the investigations and study of pertinent phases of our life, and the development of social and civic competence of our citizenry.

"Business enterprises must find a way to support the whole educational program effectively, regularly, and **now.**"

Supplemental private support for education, the resolutions suggested, could be offered in the form of endowments, grants-in-aid, buildings, payments for research, contributions to demonstrably sound organizations which raise and disburse funds for specialized education, or scholarships to qualified individuals.

Educators and public leaders who have endorsed NAM undertaking include: Dr. James Bryant Conant, president, Harvard University; Dr. Joseph C. Hinsey, dean, Cornell University Medical College; Willard E. Givens, executive secretary, National Education Association; Dr.

Howard A. Rusk, chairman, National Security Resources Board, and associate editor, The New York Times; S. Sloan Colt, president, Bankers Trust Co., New York, and president, National Fund for Medical Education; Richard C. Patterson, Jr., U. S. Minister to Switzerland, Allan B. Kline, president, American Farm Bureau Federation; and Bernard F. Gimbel, president, Gimbel Brothers, Inc., New York.

A copy of "Industry's View on Financial Support for Education" may be obtained by addressing the National Association of Manufacturers, 14 West 49th Street, New York 20, N. Y.

The Hugo H. Schaefer Remington Medal Presentation

Joseph Price Remington to whose memory and accomplishments this medal is a fitting testimonial, played many parts in American Pharmacy attaining distinction in each because of his varied experience. Before graduation from The Philadelphia College of Pharmacy he served an apprenticeship in a pharmacy and subsequently acquired experience in industrial pharmacy through service with Dr. E. R. Squibb and Powers & Weightman. After this he operated a pharmacy for several years. In education he was successively assistant to Professors Parrish and Proctor at the Philadelphia College, succeeding the latter as Professor of Pharmacy and later following Professor Maisch as Dean.

Remington's membership in The American Pharmaceutical Association was marked by continuous and effective participation in its affairs for over fifty years, serving as President in 1892 and as Chairman of the Council for several terms. During later years he was regarded as one of the "Elders in Pharmacy", that unofficial group which serves a useful role in any organization. His connection with Pharmacopoeial Revision began with membership on the committee customarily appointed by the Philadelphia College to make recommendations for the 1880 Revision. In due course he became Vice-chairman of the General Revision Committee and was later Chairman, holding this office at his death.

There are some parallels in the careers of Joseph P. Remington and Hugo H. Schaefer, the recipient of 1951. Each activity practiced pharmacy in a store. Each had a period of industrial experience. Each later embarked on a career in pharmaceutical education, reaching professorial status in his respective field and eventually becoming a Dean. Similar parallels are apparent in their participation in The American Pharmaceu-

tical Association and in Pharmacopoeial Revision. Fortunately Hugo is not ready as yet to be considered one of the Elders in Pharmacy but when he is, he will surely be well qualified.

The Committee of the New York Branch which in 1918 formulated the conditions for the award of this Remington Medal made but two specifications for its bestowal—it should be given for outstanding service in American Pharmacy and the selection of the recipient should rest with the Past Presidents of the A.Ph.A. There were no specifications as to the nature of this service nor its duration. This is a most unusual policy in connection with an award but a wise one when one considers the many facets of Pharmacy. In the 30 odd years since its establishment it has been bestowed on practicing pharmacists, research workers, educators and others whose achievement warranted this mark of recognition. Conceivably it might be awarded for an outstanding achievement in the year preceding bestowal but invariably the recipient has had a long record of service.

Dean Schaefer who this evening becomes one of this distinguished company has contributed to the advancement of our profession in diverse ways but few of which can be mentioned but the effectiveness of his contributions has not been impaired by their diversity. As teacher and educational administrator the regard of the thousands of students having contact with him over the years is the best testimony of his ability and understanding. Although not formally trained in the law, his keen foresight of the effects of proposed legislation regarding the use and distribution of medicinal products, has established his reputation as an authority in this field. His co-workers in the many organizations in which he is active have found him willing to give unsparingly of his time and talents. In several instances the honors of official position have come to him as a result, in others he is just a floor member but this does not make any difference in his participation. His skillful handling of controversial matters, coupled with a rare ability to secure unity where there is agreement on the objective but seemingly irreconcilable differences as to the means of attainment, is well known to many of us. Just about the time the discussions become heated with neither side willing to make concessions, he asks the privilege of floor and with a prefatory "Now look", proceeds to lay the ground for compromise.

Hugo H. my pleasure in having been given the privilege of presenting this Remington Medal to you is all the greater because of our long association. This honor can come to but few but all of your co-workers and friends can and do join you in the satisfaction which must be yours at this time.

— Charles W. Ballard

Pharmacy as a Profession for Women

Pharmacy through the ages has been a progressive, constructive force in every nation. More and more women are finding in it an outlet for their abilities.

Not too many years ago when one said "pharmacist" the only picture that came to mind was the corner "druggist". Now there are many branches of pharmacy and they all offer an opportunity to serve humanity at a high level, with commensurate social and financial security.

Every one is familiar with the retail pharmacist's duties. This group is the backbone of the profession. These pharmacists contact and influence a tremendous number of people and they are always respected and willing workers in community life.

There is the professional pharmacy which only fills prescriptions and supplies health and sickroom needs.

The large pharmaceutical manufacturing houses are becoming increasingly aware of the advantage in employing pharmacists as research people. A pharmacist's training includes a variety of chemistries: general inorganic, organic, qualitative, quantitative, bio-chemistry and perhaps others, with a corresponding pharmaceutical chemistry. The pharmacist must also have botany, pharmacognosy (medicinal plants), bacteriology, metallurgy, anatomy, and a very sound foundation in mathematics and physics.

There are probably more women in hospital pharmacy than in any other field. The hours are usually much better than in retail pharmacy. One has a much better chance of becoming a chief pharmacist with a master's degree. Some of the very large and important hospitals require at least a master's and preferably a doctor's degree in pharmacy for their chief pharmacists.

One very professional magazine, sent only to the "Elite of the Pharmaceutical Profession" is edited by a very charming woman. The University of Texas at Austin, Texas offers a course in Editorial Pharmacy.

One girl has gone into accounting. She does only drug store and hospital books. There is government service here or abroad. One need only look at two out of three drug store windows to see that the advertising display field is wide open.

Teaching has purposely been left until last. There is a crying need for women on pharmacy school faculties. Usually there are so few girls in comparison to total enrollment that a woman on the faculty is an inspiration. Most of the instructors I know have a doctor's degree or are working toward one. There are two women Deans of Colleges of Pharmacy in the United States.

Pharmacy is not what is known as a snap course. At Minnesota and other pharmacy schools holding membership in the American Associa-

tion of Colleges of Pharmacy, one is required to have completed the following: one year in the college of Science, Literature and the Arts, three years in the College of Pharmacy, one year of internship or practical experience, before being permitted to take the State Board Examination for licensure to practice.

If a girl marries this training is invaluable. She has a much better than average knowledge of the human body, its needs, and care. Pharmacists are almost always good cooks. They are trained in accuracy and in following directions.

To make a good pharmacist a girl must like science, people, and hard work. Pharmacy is an exacting and responsible profession and completely fascinating.

Louise Hunkins
2401 Russell Ave. So.,
Minneapolis, Minn.

The Measuring Stick for Professional Panhellenic Association Membership*

MARJORIE MOBURG COGHILL, President Kappa Epsilon

The constitution of PPA (purposes, principles and ambitions) explains the requirements for membership. It is well to review the qualifications and remind ourselves of the ideals the founders had in mind when they had the foresight and courage to start our organization 25 years ago. It is beneficial to reconsider the standards that we once met when being accepted by the Professional Panhellenic Association and to ask the question "Are we maintaining those standards?"

A measuring stick could be the scientific meter stick which is easily divided into centimeters or 100 divisions. We could spend out time listing 100 points by which membership is evaluated. There are hundreds of reasons, causes and effects for our organization but fundamentally our standards can be stated by the use of a few words.

My dictionary tells me that to measure is to ascertain extent, degree or capacity by a standard; hence to estimate; to bring comparison or competition . . . to measure one's skill against a rival.

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*Presented at Professional Panhellenic Association Convention, Old Point Comfort, Fort Monroe, Virginia, November 30, 1951. Mrs. Coghill is an alumna of the College of Pharmacy of the State University of Iowa. Her address is 701 Prospect Avenue, Lake Bluff, Illinois.

A comparison of the purposes of the member fraternities of the Professional Panhellenic Association brings out some very interesting facts. The common factor of most and of PPA itself is education. The goals are to encourage high scholastic rating among members; to promote higher education by scholarship funds and loans; to develop skills and talents to the utmost; to cooperate with faculties and administrators of colleges and universities; to become conscious of ethics in the classroom, on campus and in professional work; to influence students, shape, guide and direct thought and thus encourage them "to think"; to advance ideals and know the meaning of old fashioned right or wrong (the term 'old fashioned' is used because in our complicated modern ways we forget the simple truth and its merits).

Another common factor of member groups is the promotion of professional achievements; to strive for excellence of performance; to develop opportunities; to improve conditions of work and salary (but remembering that there are values and rewards in mind and spirit and not in wealth alone); to maintain projects to enrich the profession; to participate in vocational guidance; to cooperate with interfraternity activities, with all students and faculty, with the business world and with the community.

The third factor is that of individual growth. It is within the power of the professional fraternity to develop character, to create an awareness of responsibility, necessity of leadership on the highest plane possible; to create and maintain fellowship and friendship; to stimulate individual effort; to make good citizens who are willing to think, to do, to enjoy, and to maintain freedom.

The over-all purpose of the Professional Panhellenic Association is service, professional service to the community in which members work and live and service with complete awareness of the responsibilities involved and a knowledge of the obligations.

The measuring stick is not one of linear consideration only. It must be a measure of several dimensions, like a cube that goes on and on. It has the base or length of education, the height of professional standards, the depth of individual integrity with faith and courage and the infinite dimensions of service to all people under all circumstances.

The Professional Panhellenic Association strives to stimulate and encourage all that is fine and progressive, a tremendous task at which we must work constantly. The Association's strength is as great as that of its member fraternities; the strength of the fraternities is as great as the individuals who are participating. Each unit is dependent upon the others.

It takes each individual person to keep the measurement up to standard so that no part will be out of proportion.

The American Foundation for Pharmaceutical Education*

President C. S. Beardsley gave an encouraging summary report of activities since the last meeting and stated that the Foundation was making progress in its several undertakings.

Secretary Briggs presentd an informal comparative statement of contributions and expenses for the calendar years 1950 and 1951 as follows:

Contributions:

January 1, 1950 through December 31, 1950	$114,040.00
January 1, 1951 through December 31, 1951	$165,329.84

Expenses (total):

January 1, 1950 through December 31, 1950	$202,415.38
January 1, 1951 through December 31, 1951	$205,150.72

(Note the year January-December 1951 is the first year with full time paid Secretary; rent for separate office; furnishing office.)

The Secretary estimated the total contributions for 1952 at $150,700. In addition the Foundation receives about $15,000 per year from interest on investments making a total anticipated income for 1952 of approximately $165,000.

President Beardsley informed the committees of his activities looking toward a campaign among retail druggists through the N.A.R.D. He advised that he would seek to develop a plan through Secretary Dargavel and he sought the advice of the Committees on details of such a plan which he would later submit to them.

Treasurer Schaefer informed the Committees that the Foundation was operating within the established budget. He also commented upon certain economies and closer management practices which should enable the Foundation to carry all of its current programs at their present levels, but at somewhat lower cost than heretofore.

Dr. Dunning and others commented upon the possibilities of increasing the income of the Foundation by investment of reserves, now in Government Bonds, in securities yielding a higher rate of interest making particular reference to investment in short term bonds to keep at least a portion of the reserve in a fluid state or ready availability, if such appeared necessary. However, after general discussion, it was agreed that in view of the low market prevailing in Government Bonds, the Foundation should not consider disposing of present bonds and reinvestment in other securities at this time.

*Abstract of minutes of the joint meeting of the Executive and Finance Committees held on January 22, 1952 at 1450 Broadway and Hotel Astor, New York City.

Secretary Briggs reported he had discussed the tentative program of Foundation sponsored Teaching Fellowships in Business Administration with the deans of representative colleges of pharmacy and deans of graduate schools of business administration and said the reactions from these conferences were considered quite favorable for proceeding with the plan. He also reported on the results, to date, from an information-questionnaire letter of December 26, 1951, to deans of all the colleges of pharmacy with reference to this proposed program and found the general response was favorable. A significant number of colleges of pharmacy having indicated their enthusiastic interest; their intention to embrace the plan, if offered; and their ability to match the contribution of the Foundation for such Teaching Fellowship, it was felt the plan should be made available, at least on a limited scale, in September, 1952.

It was moved and passed that the Secretary be authorized to complete the detailed arrangements for implementing the plan; distribute invitations to all colleges of pharmacy; and obligate the Foundation to not more than $20,000 for such Teaching Fellowships for the period September 1, 1952 to August 31, 1953. It was understood that the selection of Teaching Fellows would be under the jurisdiction of the Board of Grants in the same manner as are the regular full term Fellowships.

The Committees disapproved the granting of support for graduate studies abroad.

The invitation for a contribution to the E. F. Kelly Memorial Fund Committee was discussed with interest and all present concurred on the worthiness of this project of the Maryland Pharmaceutical Association. However, the Charter of the Foundation does not permit such use of its funds, and the Secretary was instructed to so advise the Association.

New Books

Biological Antagonism—The Theory of Biological Relativity, by Gustav J. Martin, Sc.D., Research Director of the National Drug Company, Philadelphia, Nov. 1951. 516 pages with 64 figures and 44 tables The Blakiston Company. Price $8.50.

In his preface, Dr. Martin states, "The purpose motivating the preparation of this summary of knowledge in the field of displacement is a belief that in no single instance of specific displacement has a thorough job been done, and that such work, properly undertaken, will lead to discoveries of chemotherapeutic agents of great value in medical science".

This book presents a thorough, complete, and concise study of the theory of biological relativity—that "general law" which underlies all biological activity and is fundamental to the resolution of all problems in biology.

The author further states the points of prime interest are: "Biological antagonism as a dominant factor in biology, as the essential feature of all living things. Biological relativity as the basis of antagonism and as the concept bringing all living processes within the scope of the physical laws, the laws of statistics and chance. Biological oderliness is actually based upon disorder which is rendered orderly by the phenomenon of biological antagonism. In this concept we have a revolutionary view of biological worlds. It forms the basis of evolution and of every other phase of biology. It is proposed as the underlying principle of life itself. In all biology there are few generalizations, few principles of broad scope. In biological antagonism and relativity, we propose a concept invading every sphere of research and thought concerning living things."

Research workers in immunology, pharmacology, chemotheraphy, medicine and the entire field of biology, will find the 1900 references throughout the book extremely helpful. Carefully selected by the author, because of their pertinence to the subject, they present a comprehensive survey of all the literature in the field.—R.A.L.

Sells As Customers Like It, by W. E. Sawyer, Director of Education for Johnson and Johnson, in collaboration with A. C. Busse, Researcher and Consultant on Salesmanship, New York University. 1951. 140 pages with numerous cartoons and slogans. Funk and Wagnalls Company. Price $2.50.

The book is divided into three parts: The People You Sell; The Principles You Sell By; and The Plan to Sell Yourself. The book is written in everyday language, flavored with humor. To make the basic selling principles come alive, the authors have sloganized and cartooned the main points. It is packed with good common sense. Delicate points in technique are stressed. For example, it had never entered the reviewer's mind that, in answering a customer's question, "Yes, and . . ." is better technique than "Yes, but . . .". The book should be studied by every student of pharmacy and the practitioner can read it with both pleasure and profit.—R.A.L.

Formulary and Therapeutic Guide, prepared by The Formulary Committee, which is appointed by the Medical Board of the New York Hospital and which is full representative of all clinical services, the Department of Pharmacology of Cornell Medical College, the Department of Pharmacy and the Hospital Administration. 1951. 355 pages. Appleton-Century-Crofts, Inc. Price $3.00.

The Formulary has a history. It was first published in 1816 under the title "The Pharmacopoeia of the New York Hospital" by the authority of the physicians and surgeons of that hospital. The essay was the collective works of Doctors Samuel L. Mitchell and Valentine Seaman. Its publication antedated that of the first United States Pharmacopoeia which appeared in 1820. In fact, Doctor Seaman was president of the first Pharmacopoeial Convention. The needs for a pharmacopoeia and the objectives were diverse but one of the original objectives has persisted through the revisions over a period of 135 years. That objective reads "The subject has been arranged . . . to facilitate the object of the prescriber, the student and the apothecary . . ." Changes were made in the revisions in keeping with the discovery of new drugs and their uses but the greatest single change did not occur until 1933, when, under the egis of Dr. R. A. Hatcher, then of the department of pharmacology of Cornell University Medical College, a formulary was published as the basis of a policy of hospital operation. The principles of this policy were to bring some semblance of order out of chaos in the selection of drugs and their use in the treatment of disease. Many hospitals now have, or are preparing, a formulary for their own use in mimeographed or printed form, which is expensive and required a large amount of time and effort on the part of the staff. It seems to the reviewer that the New York Formulary and Therapeutic Guide can be adapted to any hospital, large or small, with a saving of time and expense. Further, it should be said, the New York Hospital Formulary Committee functions as a policy forming body for rapport between the Department of Pharmacy and other patient-care groups constituting the professional staff of the hospital. The Formulary describes in detail how implementation is accomplished.—R.A.L.

Gynecologic Nursing, by Robert J. Crossen, A.B., M.D., F.A.C.S., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University School of Medicine and Ann Jones Campbell, R.N., B.S., Superintendent of Nurses, Barnes Hospital, McMillan Hospital, St. Louis Maternity Hospital, Washington University Clinics, Instructor in Nursing, Washington University School of Nursing. Fourth Edition. 1951. 256 pages. 167 illustrations including two in color. The C. V. Mosby Company. Price $3.50.

The order in this edition has been rearranged so that the nursing procedures are in the chapters where they apply. Having the whole subject of disease, treatment and nursing care in the same chapter gives a continuity to the text which makes it easier for the student to grasp anad retain the essential facts. Newer discoveries in anatomy, physiology, and therapy of the modern drugs, have been incorporated. The illustrations are especially clear and well done.—R.A.L.

Pharmaceutical Arithmetic and Latin, by M. L. Schroff, M.S. (M.I.H.) Principal Birla College, Pilani: formerly Head of Department of Pharmaceutics, Banares Hindu University and G. P. Srivastava, M.Pharm., Banares Hindu University; revised in collaboration with Paramjit R. Pabrai, M.Pharm., and B. M. Mithal, M.Pharm., both of the Division of Pharmacy, Birla College, Pilani. 1951. Second edition. 155 pages. Pindara Limited, Calcutta. Price, Rs. 10/8/ per copy.

In the first edition this text was published in two volumes, but since the two subjects (arithmetic and Latin go hand in hand and since proficiency in both subjects must be shown for the qualifying examinations, the second edition is published as one volume. Several chapters have undergone extensive change. The chapter on "Isotonic Solutions" has been completely re-written and a new chapter on "Displacement Value of Medicaments" has been included. The book will be of interest to students and teachers of these subjects in this country.—R.A.L.

Measurement and Evaluation in Physical, Health, and Recreation Education, by Leonard A. Larson, B.A., B.P.E., M.Ed., Ph.D., and Rachael Dunaven Yocom, B.A., M.A., Ph.D., both of the Department of Education, New York University. 1951. 507 pages. 21 full page plates and numerous tables. The C. V. Mosby Company. Price $7.50.

To an unexperienced reviewer in this particular field, this book seems to be a most valuable addition to the literature for those engaged in measuring and evaluating the progress made by training in the fields indicated in the title. The subject matter is divided into five sections. Section One covers the nature and scope of the measurement and evaluation program. Section Two deals with the measurement of the product of education. Section Three discusses the evaluation of the process of education. Section Four is an anlysis of Results. Section Five deals with the administration of the program of measurement and evaluation. An appendix is attached which gives scoring tables used in administering tests.—R.A.L.

Essentials of Pharmacology, by Frances K. Oldham, Ph.D., M.D., and F. E. Kelsey, Ph.D., and E. M. K. Geiling, Ph.D., M.D., all of the Department of Pharmacology, The University of Chicago. 1951. Second Edition. 462 pages with basic illustrations, tables and formulae. J. B. Lippincott Company. Price $5.00.

Both the favorable reception of the first edition of this text and rapid advancements in the pharmacological field are responsible for the appearance of a second edition. New sections which have been added, revised, or enlarged include the role of radioactive isotopes in medicine and medical research; a section on adrenergic blocking agents; a new chapter covering ganglionic blocking agents and muscle relaxants; and an extensive revision of the section on antihistiminics.

While the discussion of the new antisyphilitics has been enlarged, the older ones have not been abandoned, since the value of the antibiotics in this field is still in the experimental stage. Discussions of such new agents as ACTH, cortisone, and the newer antibiotics are included. The arrangement of subjects in chapters make the book especially valuable as a teaching text for students begining the study of this discipline. The bibliographies at the end of each chapter include only the more recent books and journal articles which are easily accessible to the student.--R.A.L.

The Physiological Foundation of Dental Practice by L. L. Langley, M.A., Ph.D., and E. Cheraskin, M.A., M.D., Department of Physiology, University of Alabama School of Dentistry, Medical College of Alabama, with a Foreword by Joseph F. Volker, D.D.S., Ph.D., Dean, University of Alabama, School of Dentistry, 1951. 511 pages. 149 illustrations. The C. V. Mosby Company. Price $8.25.

For many years, in dental education, emphasis has been placed upon the technical training of dental students. On the part of instructors, however, there has been a growing awareness of the value of the basic sciences as a foundation for professional studies. In the physiological field, the subject has been taught to dental students usually by medical teachers in orthodox courses with medical students and using medical texts or in separate courses which are usually very much abridged. The teaching has been unsatisfactory to both teacher and student. One of my own students expressed the student viewpoint exactly when he said he could see no relationship between pithing a frog and extracting a molar or constructing a denture. He looked upon physiology as one of those penalties imposed upon the student for having picked dentistry as a vocation. I found it not an easy task to convince a student that psysiology was an essential basic science for his professional studies and practice. The authors of the present text have presented the subject in a way that appeeals to the student. They have emphasized those areas that are especially applicable to dental study and practice and dwelt to a lesser degree with those areas of lesser importance and the whole field has been satisfactorily covered.

The first paragraph of the introduction reveals the technic which is used throughout the text. It reads as follows: "A man awakens one morning conscious of a toothache. When you, a dental practitioner, arrive at your office, he is anxiously waiting to obtain relief. Despite the dental trend toward prophylaxis, the majority of patients will present themselves with a chief complaint of **pain.** It is logical, then, to begin this study with a consideration of the physiological mechanisms involved in the perception of pain and other sensory modalities."

When a student has read that paragraph he has an urge to read the next and then the next and the next. What better method could one

find to stimulate the interest of the student in the subject and convince him that physiology is a basic dental science. Would that some qualified psysiologist would apply that technic in writing a text for students of pharmacy.—R.A.L.

A Study of Antimetabolites by D. W. Woolley, Member of the Rockefeller Institute for Medical Research. 1952. 269 pages with many tables and formulae and a bibliography covering the field. John Wiley and Sons, Inc. Price $5.00.

The study covers the investigation of those substances which specifically produce deficiency diseases in living organisms. Most of the examples of these antibiotics are enumerated and the author has detected some of the underlying principles which govern their action in animals, bacteria and other forms of life. He has put forward a view of the mechanism of action of these substances which gives some understanding as to how antimetabolites occur normally in living things and seem to play a part in the regulation of normal processes.—R.A.L.

Introduction to Medical Science by Julius Jensen, Ph.D., Formerly Assistant Professor in Clinical Medicine, Washington University, St. Louis and Henry W. Noller, M.D., Associate St. Luke's Hospital, St. Louis. 1952. 533 pages. 7 illustrations. The C. V. Mosby Company. Price $5.75.

The text is planned as an introductory course to clinical medical science. It builds on the foundation of the physical and biological sciences which the student has had or is carrying concurrently with the course in which it is used. It is intended to lay the foundation for study in all clinical fields. When used preliminary to or at the beginning of each clinical subject, it would be invaluable to the student. The field is discussed in six units which deal with: the development of medical science; the cause of disease; pathology, how disease manifests itself in the body; how the doctor makes the diagnosis (diagnostic procedures); how disease is treated; and how disease is controlled and prevented.—R.A.L.

Essentials of Histology by Margaret M. Hoskins, Ph.D., and Gerrit Bevelander, Ph.D., both of New York University. 1952. Second Edition. 240 pages. 135 text illustrations and 2 color plates. The C. V. Mosby Company. Price $4.

It seems, in these latter days, writers of textbooks are turning their efforts more and more toward the writing of books that are good teaching instruments with no intention of making books of an encyclopedic nature. The authors in the present instance have done remarkable well in writing a text that is not large but covers the fundamental study of the bodily tissue with unusual clarity. The drawings of the basic tissues are excellent. The text should appeal to those instructors who are teaching the elementary courses which are being introduced into the curricula of many schools of pharmacy.—R.A.L.

THE WALTER REED CENTENARY

September 13, 1951 was the centenary of Walter Reed's birth. He died November 23, 1902, only a few weeks after he had been named Librarian of the Army Medical Library. Interest in Walter Reed is nation wide. Wide publicity has been given in commemorating his birth and service. He is known chiefly because of his discovery of the manner of transmission of yellow fever. He has saved untold suffering and thousands of human lives. Because his service would be stressed elsewhere, the Army Medical Library participated in the anniversary celebration by presenting a public exhibit which presented a more personal view of his life. This was appropriate, for in his capacity as Curator of the Army Medical Museum, as Instructor in the Army Medical School and finally, though briefly, as Librarian of the Army Medical Library, the last several years of Major Reed's life were much centered in the building presently occupied by the Library. So too, we may believe, was his heart. Concerning his assignment as Librarian, he is said to have remarked that it fulfilled "the highest ambition" of his life. Concerning the exhibit, the **Army Medical Library News** of September made the following statement:

"The Library's exhibit will consist of photographs and manuscript material. The photographs show Walter Reed, the Army Medical School Class of 1901-1902, his birthplace in Gloucester County, Virginia, and his grave in Arlington National Cemetery. Manuscripts include Walter Reed's application for the position of Assistant Surgeon, United States Army, his letter of acceptance, duty reports from the Army Medical Museum and from Columbia Barracks, Cuba, and, in Major Borden's hand, clinical charts of Reed's last hours together with the formal notice of death.

"The documents relating to Walter Reed's life will be viewed with mixed emotions. Some of them will be interpreted in terms of his final great achievement, with the consequent saving of human life and suffering; others are touched with the melancholy of his sudden and untimely death. Studied as a whole, these documents present another and less dramatic evaluation: that of a sincere individual, more mindful of duty than self, finding satisfaction and opportunity for worth, whatever his assignment."

The December 1951 issue of **Progress in Health Services** published by **Health Information Foundation**, gives the results of a survey conducted in the City of Wichita and Sedwich County, Kansas, and what can be accomplished by the citizens of the community when they were

aroused by the revelation of a survey as regards the health of the community.

The health section of the survey showed the inequalities of the health and sanitation services, the duplication of effort and the "buck passing" between city and county health departments.

Some of the specific improvements in the health services brought about by the active participation by citizens in their public health program are: A new county hospital; a full-time medical director; better school health services; necessary medical care for families not on welfare rolls but unable to afford such services; maternal care classes and well-baby conferences; milk consumed in Wichita is safer; a highly successful rodent control program; improved sanitary standards in rural areas; a continuing training course for food handlers; vital statistics information; a trained health educator; day care and boarding facilities for children; and an increase in the public health budget.

Qualified Men Wanted! Budget allocations have been made already for additions to the staff of Ferris Institute in pharmacology, in pharmacy, and in chemistry. These positions are additions to the teaching staff and are not replacements. Applications for all these positions should be made to Dean Ralph H. Wilson, Ferris Institute, Big Rapids, Michigan.

Early American Medical Journals provided the subject for the November exhibit of the Army Medical Library. It was prepared by Mrs. Sharlene H. Rafter of the Reference Division. The display centered around **The Medical Reporter** (1797-), the first American medical journal, and its contemporaries. The exhibit stressed problems of early medical publishing, not too different from those of today, and the development of early local journals.

NEW IN THE FAMILY

Barbara Brydson.—Born December 26, 1951, daughter of Mr. and Mrs. W. E. Brydson, eighth grandchild of Dean Emeritus W. F. Gidley, University of Texas.

Benjamin and Thomas Doerge.—Born January 24, 1952, identical twins, sons of Prof. and Mrs. R. F. Doerge, University of Texas.

Andi Lee Feurt.—Born February 15, 1952, second daughter of Instructor and Mrs. Seldon D. Feurt, University of Florida.

Section on Medical Sciences — Subsection on Pharmacy Np*

American Association for the Advancement of Science

The Subsection held six sessions during the Philadelphia meeting. All sessions were joint meetings of the Subsection, the American Pharmaceutical Association Scientific Section, and the American Society of Hospital Pharmacists. Twenty-five papers reporting original research were presented and two panel discussion were held.

H. S. Bailey, Jr. and J. E. Christian, Purdue University, School of Pharmacy, Lafayette, Indiana, described a procedure for the synthesis of urethan in with N^{15} the amide group. Studies of the stability and distribution of this compound in tissues showed that there is no localization of the amide nitrogen in a particular organ or tissue. It was established that the amide nitrogen is excreted by way of both the feces and urine and that in the urine the nitrogen was found to be excreted partly as urea and partly in the form of ammonium ion nitrogen.

A. R. Biamonte and G. H. Schneller, Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey, gave details of experimental and analytical procedures in a study of the solubility of triple sulfonamide mixtures at different pH ranges and in the presence of suitable buffers. They pointed out that the mixed sulfa drugs have considerable advantages particularly with reference to solubility when the mixtures are used in therapy.

M. J. Rodman, Rutgers University, College of Pharmacy, Newark, N. J., evaluated the anhidrotic action of atropine on human thermoregula tory sweating. He found that the reduction of sweating caused by depression of sweat gland cholinergic neuroeffectors is antagonized by stimulation of other parts of the sweat apparatus and by the complex effects of atropine on various other sites of action.

E. V. Svedres and G. L. Jenkins, Purdue University, School of Pharmacy, Lafayette, Indiana, reported on the synthesis of three new types of derivatives of the fluorene nucleus. They described derivatives of 2-aminofluorene, 2,7-diaminofluorene, and 2,2'-diamino-9,9'-spirobifluorene and through preliminary pharmacological studies established that these compounds have little potential as therapeutic agents.

T. J. Macek, Research and Development Division, Merck & Co., Rahway, N. J., told of studies on crystalline vitamin B_{12} with reference to stability and formulation of pharmaceutical preparations. He found that the stability of crystalline vitamin B_{12} in pharmaceutical mixtures is influenced by the composition of the mixture, its pH, the temperature

*A resumé of the paper given in Subsection on Pharmacy at the 1951 meeting in Philadelphia.

"A FINE BOOK FOR THE STUDENT"

— Journal of the American Pharmaceutical Association

Scoville's

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JENKINS • FRANCKE • BRECHT • SPERANDIO
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Now in its 57th year, this standard textbook presents the latest information and developments in pharmacy. It is a text that will be invaluable to the student today . . . useful in his practice tomorrow.

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New material has been introduced in each chapter. Some of the more important additions include new subject matter on tablets, parenteral solutions, sterilization and disinfection. Completely new chapters have been added on solutions for special purposes and allergenic solutions. The many new drugs and preparations are fully described and detailed. New examples cover all classes of prescriptions encountered in practice. Contains new, illustrated material on parenteral injection not to be found in other pharmacy texts.

EXTENSIVE PRESENTATION ON INCOMPATIBLES

The chapters on incompatibles—revised and enlarged—are specially arranged for use as a separate course if desired. They present general principles as well as specific information on the therapeutic, physical and chemical incompatibilities; changing the form of ingredients; dispensing incompatible ingredients separately; incompatibilities of organic substances, and antibiotics and antihistamines. Material is conveniently arranged for quick and easy reference.

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and conditions of storage. The stability may be influenced especially by the presence of chemically reactive substances.

V. E. Tyler, Jr., and A. E. Schwarting, University of Connecticut, College of Pharmacy, Storrs, Connecticut, showed that paper partition chromatography is of value in the separation of pairs of interconvertible isomerides among the ergot alkaloids. They found fluorescence and color development with a modified VanUrk reagent valuable in determining position.

J. R. Stockton and R. Zuckerman, Sharp & Dohme, Inc., Westpoint, Pa., studied a potentiometric method of assay for sodium p-aminosalicylate (sodium PAS) and found that an aqueous solution of the compound dissolved in propylene glycol and iso-propyl alcohol treated with a solution of perchloric acid in the same solvents caused measurable increments in the pH changes. Curves indicating decomposition of the sodium p-aminosalicylate make possible the determination of the amount of sodium PAS present as well as the amount decomposed.

D. A. Schlichting and G. L. Jenkins, Research Laboratories, The Wm. S. Merrell Co., Cincinnati, Ohio, reported on the synthesis of a lactone related to the cardiac aglycons. The method of preparation was described for 3-tridecyl-4-hydroxy-2-butenoic acid gamma lactone. The synthesis is an attempt to prepare lactones with an alkyl substituent of a molecular weight approaching that of the steroids.

S. Scheindlin, A. Lee and I. Griffith, Philadelphia College of Pharmacy and Science, Philadelphia, Pa., established that riboflavin markedly intensifies the action of light on folic acid through oxidative cleavage. The destruction of the folic acid is retarded when air is replaced by nitrogen. The authors proposed a possible mechanism for the reaction.

M. Burke, T. L. Flanagan, R. L. Young, S. D. Bailey, and A. E. Heming, Research Division, Smith, Kline and French Laboratories, Philadelphia, Pa., presented a new sensitive assay for khellin in serum based on its polarographic reduction. They studied the blood level of khellin after administration by intravenous as well as oral routes.

J. W. E. Harrison, C. M. Ambrus, and J. L. Ambrus, Philadelphia College of Pharmacy and Science, Philadelphia, Pa., studied the habituation, tolerance and dependence on the drugs amphetamine and desoxyephedrine in rats. They showed that there is a definite physical tolerance and that there was little evidence of difference between the two drugs.

J. L. Ambrus, C. M. Ambrus, J. W. E. Harrison, C. E. Moser and C. E. Leonard, Philadelphia College of Pharmacy and Science, Philadelphia, Pa., showed that the effect of hypnotic as well as general anesthetic drugs is increased by the concomitant administration of antihistamine drugs. On the basis of the result they suggest the possibility of the use of antihistamines in connection with general anesthesia for surgical operations.

(Continued in July Issue)

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